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OCEAN INCINERATION

HEARINGS

BEFORE THE

SUBCOMMITTEE ON
ENVIRONMENTAL POLLUTION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

NINETY-NINTH CONGRESS

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OCEAN INCINERATION

WEDNESDAY, JUNE 19, 1985

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION,
Washington, DC.

The subcommittee met at 10 a.m., in room SD-406, Dirksen Senate Office Building, Hon. John Chafee (chairman of the subcommittee) presiding.

Present: Senators Chafee, Bentsen, and Lautenberg.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator CHAFEE. Good morning, ladies and gentlemen. This is the first of two oversight hearings on the subject of ocean incineration.

Today we are going to hear from Governor White of Texas and other State officials as well as environmental and industry groups on the pros and cons of ocean incineration.

Next month we will have EPA and other Federal agencies up to testify on the proposed ocean incineration regulations.

Since 1983, when EPA first proposed to issue operational permits for ocean incineration, much controversy has surrounded this method of hazardous waste treatment. During these hearings we hope to receive answers to a number of critical questions which have been raised over the past 2 years. For example, is ocean incineration needed? Second, has adequate research been done on the effects of this technology on marine life? Third, are appropriate steps being taken to prevent a catastrophic spill? Fourth, is it as safe or safer than incineration on land?

I note that the distinguished ranking member of the full committee, Senator Bentsen, is here. This is a subject in which he has had a long and deep interest. I am pleased that we are able to schedule these hearings at your request, Senator, because I know this is a matter that has concerned you, and you have raised it frequently in committee meetings. As a result of your concern, we are holding these hearings today.

We would be glad to hear from you if you have an opening statement.

OPENING STATEMENT OF HON. LLOYD BENTSEN, U.S. SENATOR FROM THE STATE OF TEXAS

Senator BENTSEN. Thank you very much, Mr. Chairman. Let me say I am most appreciative of the efforts of you and the chairman of the full committee, Senator Stafford, in scheduling these hearings at my request. You have worked hard to protect the environment. I know of your deep interest in this. I am most appreciative.

Governor White, won't you sit down and make yourself comfortable. We will be hearing from you in just a few minutes.

Supporters of ocean burning say it is the best way to destroy toxic wastes. But the big question is whether toxic wastes are all that it would destroy.

No one denies the potential benefits of this new method of disposing of these wastes, but a great many questions are raised about its potential for damaging the environment; for damaging the fishing and other industries that are vital to the economy of the gulf coast. But of most concern is the possibility of damaging the health and the well-being of people in the affected area.

The Gulf of Mexico is currently the only site designated for ocean incineration. Under the Environmental Protection Agency's proposed regulations, incineration permits could have been issued within a year. Therefore, these hearings may well provide the best opportunity to examine the issues and the questions that have been raised in regard to the gulf and other possible future burn sites prior to any decisions that are made.

The Texas Gulf is vital to the well-being of a lot of people. Contamination or even the threat of contamination could be very harmful to the fishing, shrimping, tourism, real estate, other interests, and the health of the people in that area. Our uppermost concern must be the health and safety of our citizens.

I will say at the outset of this hearing that an activity that unreasonably threatens health and the welfare of our people or threatens the damage to gulf coast resources is clearly not acceptable.

I am mindful of the fact that American industry creates jobs and products to enhance the lives of all of us. It is a major factor in our quality of life. But we also know that a variety of wastes are produced as a byproduct of those benefits.

This country has learned at great, and sometimes tragic, cost that some of these wastes are long-lived wastes. They are deadly if not handled with great care.

Attempts to deal with the more threatening chemicals by storing them in the ground has not always been acceptable. Storage of those chemicals does not solve the problem; it just prolongs the time of solution. Where improper storage occurs, there is ultimate damage to the environment in yet another potential life-threatening situation.

An alternative for disposing of PCB's and other dangerous wastes has to be found. Ocean incineration has been advocated in some corners as one of those alternatives.

I have consistently expressed my concern over this method of disposal, as I have monitored EPA efforts to identify ocean incineration sites and to formulate regulations for permits.

By request, EPA provided public access to this process by holding a number of hearings, two of them in the State of Texas, in Brownsville. In May 1984, in response to my concern and that of others, the Agency postponed burn permits which had been scheduled to be issued and to be in effect for up to 3 years. Since that time, in an effort to address the problems identified by myself and others, the EPA has designed a research strategy which is intended to assess potential impacts of ocean incineration.

To establish regulations that would govern the issuance of permits, EPA has proposed a set of regulations specifying where, how and under what circumstances ocean incineration will be permitted. To assess the needs for ocean incineration, the EPA Office of Policy, Planning, and Evaluation has conducted an assessment of ocean incineration as a treatment method for liquid hazardous wastes. The Science Advisory Board, an independent research office, has conducted a study and published findings regarding the human health and environmental risks of ocean incineration.

These documents have been available for a few months. They have been analyzed by a number of organizations and individuals, both supportive of, and opposed to, ocean incineration.

The important issues involved are these: Do we need ocean burning? Has enough research been done? Are the proposed regulations adequate for the siting and conducting of ocean incineration? Those are the questions that we are trying to resolve here.

We are very fortunate this morning to have the distinguished Governor of the State of Texas, Gov. Mark White, Mr. Chairman, who has had a deep and long concern in this. You will note if you follow his testimony the amount of research that he has done and the amount of involvement that has taken place by himself and his administration in this regard. I am very pleased to see him here this morning. I welcome him here, as I am sure you do, Mr. Chairman.

Senator CHAFEE. Thank you, Senator Bentsen.

Indeed, Governor, we welcome you here. I look forward to your testimony. I apologize that I will not be able to remain for the entire hearing. I am involved in hearings going on in another committee. Senator Bentsen will preside over these hearings.

We have a host of fine witnesses. Actually, following you, there will be three panels.

So, Governor, we look forward to hearing your testimony and welcome you here.

STATEMENT OF HON. MARK WHITE, GOVERNOR, STATE OF TEXAS

Governor WHITE. Thank you, Senator Chafee and Senator Bentsen. I appreciate this opportunity to testify before you today on a matter of grave consequence to the people of our State and to our environment.

For the record, I have submitted lengthier testimony, which I would like to have included in the record. I will summarize those statements here.

Senator CHAFEE. Fine.

Governor **White**. I would also like to submit to you the statements of the National Governors Association and the Coastal States Organization on this issue and have it also entered into the record. [See pp. 70 and 72.]

Senator **Chafee**. Yes.

Governor **White**. Those two organizations share the concerns that I and many others have raised regarding the safety and liability issues as well as an unproven need for ocean incineration and the importance of its proper regulation.

In opening, let me emphasize that this is an issue of growing concern not only to Texas. Neighboring States along the gulf coast as well as those States along the east and west coasts I think are just as concerned, even though Texas is the only State or the gulf coast is the only area that has been mentioned for a permit.

It is also important, I feel, to recognize that we in Texas fully understand and we are even comfortable with reasonable levels of risk in pursuit of greater social, industrial, technological, and economic progress. Texas has encouraged all along offshore drilling and gas drilling for oil and gas. Some amount of risk surrounds the operation of every single offshore drilling platform in the Gulf of Mexico today. But the tremendous benefits from that development for Texas and this Nation as a whole are substantial and they outweigh the reasonable risks involved.

Moreover, the offshore industry has been developed safely, minimizing the dangers through good planning and good leadership. That is all that we would ask from the Federal Government on the issue of ocean incineration.

Yet, frankly, when I look at the record, I am concerned about the sensitivity of an administration that proposes to sell off our national parklands and wants to buy Times Beach.

I think that what we are looking for is a kind of record that will instill confidence, build confidence, in the process. So when ocean incineration was first proposed, it quickly got our attention.

First I would like to discuss the lack of any logical sequence in the way the Environmental Protection Agency has handled questions about the viability of ocean incineration as being a safe and efficient disposal method.

A research strategy document from the Agency, made final in February of this year, outlines their perception of the research effort necessary for conclusive results on the efficiency and safety of ocean burning. In April, the EPA Science Advisory Board indicated the need for substantial additional research regarding the impact and effect of this disposal method. But before either of the two latter studies were released, the EPA had proposed a set of ocean incineration regulations. If finalized, these would allow the EPA to begin processing incineration permits in the very near future without the benefit of that essential research that I think we all agree must be received.

The EPA apparently assumes that a research strategy alone is sufficient to begin this permit process, since they still have not indicated how or even when any of the research would be undertaken.

It is our position that such hasty and premature actions by the EPA are illogical and should not be permitted to go forward unchecked.

Why has this process not followed a logical sequence of events? Is it because of external pressures on the Agency to begin issuing permits to impatient but aggressive and persuasive potential applicants? Is it because the Maritime Administration took a high-risk financial gamble by providing $55 million in loan guarantees for the construction and testing of two incineration ships?

Let me turn to an area that you are most familiar with. The proponents of ocean incineration frequently cite as justification, if not endorsement, of ocean disposal technology the RCRA amendments approved last year by your committee. I believe that does a disservice to the achievements that you made in those landmark amendments.

As I read it, what you did in RCRA was to place the burden of proof on the EPA in determining the safety and appropriateness of hazardous waste disposal methods. Henceforth, EPA must within a certain time demonstrate the safety of hazardous waste disposal in landfills, surface impoundments, and injection wells. Otherwise it is automatically banned.

I applaud that decision to relieve our individual citizens, our landowners and State and local governments from the burden of having to prove that a disposal method is not safe and to guarantee that it will not be permitted unless EPA proves that it is. That is exactly the perspective I hope you will take in considering the deep reservations that we have about the EPA's approach to ocean incineration.

Have they proven that an accident at sea involving an ocean incineration vessel can be cleaned up? Can they prove that the effects would not be irreversible? Has the EPA proven that there would be sufficient liability protection to cover the full impact of an accident at sea? Has it proven that the bioaccumulation from even normal operation of incineration vessels is acceptable? And is it certain that the Gulf of Mexico is the most appropriate place to pursue the program?

I reject the rationale that the impending disposal bans in RCRA are a valid argument to justify a headlong rush into ocean incineration. Those provisions should be cited in the spirit of their intent as a new standard requiring that safety must be demonstrated up front in every case.

The remainder of my testimony concentrates on the flaws in the proposed EPA regulations. My written testimony deals with these in considerable detail, but I will try to go to the heart of the matter as quickly as I can.

The liability question is of grave importance. In the event of a mishap or disaster, who is going to pay? The proposed regulations only require that the applicant demonstrate evidence of insurance coverage within a range of $50 to $500 million, yet to be determined. They do not deal specifically with the liability issue beyond the simple operator insurance. And no amount of insurance will benefit potential victims of a disaster if limits of liability are invoked under the Limitation of Shipowners Liability Act.

Attorney General Mattox's testimony, which you will hear later this morning, deals specifically with this legal puzzle, the virtually insurmountable legal hurdles that would effectively prohibit the victims of an ocean incineration disaster from recovering the full damages that are likely to occur.

The EPA's vague proposal on insurance did not adequately deal with our concern about the protection of the interest of third parties. And second, any limitation of liability related to ocean incineration operations I believe is unacceptable.

It is unlikely that a major spill associated with an ocean incineration vessel accident could ever be cleaned up sufficiently to remedy the real economic damage to the coastal area of Texas. Commercial fishing in our State is a $600 million industry. It lives or dies on the protection of a delicate ecological balance in the spawning waters for shrimp and other major catches.

Tourism, our second largest industry, is a central source of income and livelihood along the gulf. It is an industry that relies heavily on an attractive reputation. Those important sources of livelihood for Texas citizens could be severely limited, if not obliterated, by a major spill, and long-term reputational damage would be devastating.

We have experienced those very things by the biggest oil spill that ever occurred. Those are natural consequences.

Not just commercial fishermen but seafood dealers, hotel and marina operators, among others, would be potential victims.

Under our present laws, if a hazardous waste spill occurs on land, economic injuries are recoverable, but if the disaster occurs at sea, they would not be. I would suggest to you very strongly that that is the real reason we are seeing ocean incineration being pushed ahead of land-based alternatives. And the EPA, whose proposed regulations do not attempt to address these issues, is acting as a pliant partner.

There is absolutely no satisfaction in knowing recovery would be limited to the value of the ship and its essentially worthless cargo. We went through that fight over an oilspill. And no matter how much insurance they have, or they say they have, or liability that might exist, they still have that barrier to recovery. I think it is important to recognize that legal standard.

The cleanup costs alone, not to mention the high price of long-term health and environmental damage, can make Love Canal look minuscule compared to the stakes involved in this gamble.

In light of the phenomenal damage which could result from any mishap or disaster at sea, we view it as a Federal duty to ensure that full liability coverage be effective. Because the damages could be catastrophic, the indemnity must also be effective without regard to limit. If any question remains about limits on liability, then the EPA should require applicants to waive any limits as a condition of the permit, and these assurances must be given in writing.

EPA has to demonstrate the need for ocean incineration, as required in the Marine Protection, Research and Sanctuaries Act, despite their unsupported assertion to the contrary.

I believe that no further action should be taken toward permitting hazardous waste burns at sea until an adequate and substantiated needs assessment becomes final through established administrative process.

Our analysis of the EPA's proposals in three other areas—research, technical verification and procedures—leads us to numerous other specific objections. I pointed those out in the EPA hearings in April in Brownsville. They are also dealt with in the text I have given you.

I think you will find that each point raises important issues, and that in total they represent a serious and valid indictment of the manner in which ocean incineration is being dealt with by the EPA.

I will be pleased to try to respond to any questions that you might have. I have further remarks, as I said, submitted for the record.

Senator **CHAFEE**. Your entire statement will be included in the record, Governor.

That is a very powerful statement you have delivered. I remember when the hearings were held in Brownsville. To understate it, they were well attended.

Governor **WHITE**. Yes, sir.

Senator **CHAFEE**. And lively. I think all the EPA people that went received a combat award when they returned. It was an unforgettable experience. They remember it well.

We are delighted that Senator Lautenberg, from New Jersey, is here. Senator, if you have a statement, this would be a proper time to deliver it.

Senator **LAUTENBERG**. Mr. Chairman, I thank you. I do have a statement.

Senator **CHAFEE**. Before you deliver that, may I say again, Governor, I apologize that I do have to leave. Senator Bentsen will conduct the balance of the hearing. I want to thank you and the other witnesses for coming.

Senator **BENTSEN**. Thank you very much, Mr. Chairman.

Senator **LAUTENBERG**. Mr. Chairman, I would not want to take time away from this hearing, therefore, I ask that my opening statement be inserted into the record, if that is agreeable.

Senator Bentsen [presiding]. Without objection.

[The statement follows:]

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Thank you, Mr. Chairman. Mr. Chairman, I commend you for scheduling these oversight hearings on ocean incineration.

Hazardous waste disposal is among the most important environmental challenges of the next decade. We must develop new methods and technologies to address hazardous waste disposal needs. The reduction of hazardous waste at its source and an increase in recycling and recovery of such waste will be essential. Some waste, however, will remain to be disposed of.

It is within this context that incineration technologies should be viewed. Incineration under properly controlled conditions offers an important option for disposing of hazardous waste. Advocates of ocean incineration believe that this technology has a role to play in the safe disposal of toxic waste.

There are, however, a number of serious concerns which have been raised about ocean incineration and EPA's handling of ocean incineration regulation. These concerns must be addressed satisfactorily before commercial incineration of liquid organic waste can be allowed to proceed. That is why these hearing are so important. They provide an opportunity for the committee to further investigate the issues associated with ocean incineration, and to hear the views of those with contrasting positions on the promise of this technology.

To my mind, several issues remain open about ocean incineration:

What are the effects of ocean incineration?

In April EPA's Science Advisory Board issued a report on incineration which concluded that there are areas of uncertainty about the toxicities of emissions and the effects this technology could have on the public health and the environment. I am particularly concerned about these findings because the Atlantic incineration site is 140 miles off Cape May and New Jersey ports may be used as a collection point for transport to sea.

Is there a need for ocean incineration?

The New Jersey Hazardous Waste Facilities Siting Commission recently issued a report on needed hazardous waste facilities in New Jersey. The commission concluded that all liquid organic hazardous waste should be burned in land incinerators with hazardous solids and sludges. This report will be subject to review in New Jersey. But, it does raise the issue of need with respect to ocean incineration.

What are the Hazards of using urban port transfer points?

I am concerned about hazardous waste being brought into an urban area and the potential effect that a spill of this waste could have on land or in coastal waters.

Mr. Chairman, the Ocean Incineration Program has gotten off to a bumpy start, leading some to lack confidence in EPA. This problem was heightened, in my view, when EPA proceeded with a public hearing in New Jersey in April on its proposed ocean incineration regulation without giving the public adequate opportunity to review two Government reports on ocean incineration.

Mr. Chairman, I intend to explore these issues during the committee's oversight hearings. I look forward to working with the committee on these and other issues concerning the safe disposal of hazardous waste.

Senator **Bentsen**. Governor, I understand the chairman's problem. With the usual efficiency of the Senate, I too have three meetings going at this time, but this is obviously my priority. We have the Finance Committee and the Intelligence Committee meeting. And I carry this around, as I am sure you do, and it tells me where I am to be every 15 minutes and on the back it tells me who I am.

But I am most appreciative of your thoughtful statement because I think you raised some very important issues. I particularly appreciated the detailed analysis of the regulations that we are talking about here.

I can't help but remember the spill at the Bay of Campeche. When they speak about the fact that this burn is 180, 200 miles offshore, the spill at the Bay of Campeche was farther than that from some of our Texas shores and yet we suffered by it and we saw some of the ecological disruption that took place as a result of that.

In listening to your statement, in no way do I want to see the burden created by EPA regulation shifted to the States, but I do want to understand better what authorities you have available to you within the State to control ocean incineration activities.

Governor **White**. Quite frankly, we have very little, other than legal action that has been taken by the Attorney General to date.

Senator **Bentsen**. I would like to ask you about the task force that you have in this regard, how was it structured?

Governor **White**. The task force we formed on hazardous waste management was composed of some 33 members of diverse interests throughout our State. There was a consensus approach developed, and we had 70 recommendations for improving hazardous waste disposal and management. We passed legislation in this session of the legislature that will have a very favorable impact, I think, in recognizing the need for industry to have a viable alternative or technique available for the disposal of their byproducts. And if there is any State in the Nation that understands that better than Texas, I don't know who it is.

Senator BENTSEN. In this session of the Texas Legislature, you passed the Hazardous Waste Management Act.

Governor WHITE. Yes.

Senator BENTSEN. How does it work?

Governor WHITE. It will operate through the agencies that we have—the Air Control Board, the Texas Water Commission. Obviously, it is a newly created legislative opportunity. It is going to be dealing with onshore disposal techniques, injection wells, as well as other techniques.

We have today extremely effective incineration programs in Texas for disposal of toxic wastes. Our concern is largely based on the premise that if this is such a safe technique, why do they go out in the middle of the Gulf of Mexico to burn this toxic waste? And they really go outside of our jurisdiction.

For that reason, I think it is important we have congressional action taken to constrain them.

Senator BENTSEN. Along the lines of that, if the EPA went ahead and issued its regulations without addressing these deficiencies that you have spoken to, is the State prepared or is it in a position to take formal action to forestall implementation of the program?

Governor WHITE. If they follow the rules, which we don't think they have, thus giving rise to the litigation which is pending, then I don't know that we have anything that we can do to stop them from that permitting process. As I understand it, the permits will be for ships that will be leaving the Louisiana port going off into international waters to dispose of the contents of those ships, and there is very little Texas can do to touch it.

Right now we are trying to work this through the courts for their failure, and we think it is a clear failure, to follow their own regulations. We feel that we will be exposed to extreme risk without any opportunity for the State to impose any of its regulatory constraints, safety or otherwise.

Senator BENTSEN. Senator Lautenberg, a very active member of this committee, has made some major contributions on some of these environmental questions. I would like to now turn any questioning over to him.

Senator LAUTENBERG. I thank you, Mr. Chairman.

I welcome you, Governor White. It is nice to see you again.

I come from the State of New Jersey. We could perhaps fit that State into one small corner of one of your big ranches there. But we are the most densely populated State in the Union. We rate ninth in the Nation in population, despite the fact that our geographic boundaries are relatively small.

We have very, very serious problems on what to do with the material that is created by society. I don't know whether you have the waste disposal sites, to accommodate your need to dispose of waste and trash. The material that results in our State is created by the largest number of Superfund sites on the national priority list. We have more than our fair share.

Governor, in the State of Texas, I take it you are able to locate disposal sites conveniently relatively, I would say.

Governor **White**. Senator, that is a difficulty. That was the reason for our task force on the hazardous waste management.

I am not here today to tell you that we can, and I don't know that we have solved this problem, but I am suggesting that we have to solve the problem, and I am prepared to go forward and advance some alternatives to this present proposal.

We have a disposal facility located along the Houston ship channel for the disposal of high-level toxic wastes through this incineration process. And the EPA, in every study we have seen, shows it to be a very effective and apparently environmentally safe program. So therefore, I am not arguing over whether the smokestack, it is safe to breathe the air. The proponents of this proposal, this incineration, say that it is. I am not here arguing to say that it isn't.

I am just suggesting to you that if it is as safe as they say it is, why would you have to go out 160 miles in the Gulf of Mexico to do it and expose this whole enterprise to even greater risk of an accident at sea?

Let me mention, with all the sophisticated equipment that we have on the U.S.S. *Coral Sea*, just about the time we were having those hearings down in Brownsville, Senator Bentsen, the *Coral Sea* right fresh out of refitting runs over a ship out on the high seas. Had this been that incineration ship, where would we be today? Would that incineration ship have had the ability to survive such a collision on the seas? I am not aware whether it would or not, but that is a question that must be answered, I believe, before we go forward with this project.

When I listen to the people or the proponents of this at the EPA, they are acting with the same degree of confidence as the builders of the *Titanic*. And I, frankly, don't know that we have had icebergs in the Gulf of Mexico in quite some time, but there are major shipping accidents that occur on a very frequent basis.

I am advised that the Coast Guard has reported over 124 collisions from just north of Corpus Christi to just west of Port Arthur over the past year. Those 124 collisions represent more than $25,000 each in damage. That is the prospect of putting that ship on the high seas and the resultant damage that would occur to our environment as a result of some collision, and that is a much greater prospect I think than we should be willing to accept.

Senator **Lautenberg**. Governor, your reasoned and balanced approach to this is one that we take great cognizance of. I don't want to argue the other side because I am not persuaded that that is an appropriate alternative. New Jersey's Hazardous Waste Facility Siting Commission recently issued a report on hazardous waste facilities in our State. That commission concluded that all liquid organic hazardous waste should be burned in land incinerators, with hazardous solids and sludge.

This report is going to be further reviewed, but it rates the issue of the need with respect to an alternative, one of which might be ocean incineration.

Not to press the issue, but the fact that we have had these numerous collisions, the fact that your State had a devastating result from the tanker collision that occurred there, that doesn't prevent us from continuing to use that means of transportation, perhaps the only one available, for transporting oil. We have to continue to perfect the navigational techniques, the structures, et cetera, to minimize, if possible eliminate, the damage that can come from something like that. But it doesn't prevent us, in the process, from using it.

I think the same thing perhaps could be true, assuming that all the tests can be passed, particularly air quality tests, before we start this process.

But accidents occur. Certainly we saw it in oil exploration off our country. But we have to continue to pursue these things.

Governor, I am pleased to see you here. I invite you to visit New Jersey, as I am sure Governor Kean has done, and help us in our problems of locating facilities in the most densely populated State in the country. If you fly over our State, it looks green and pretty, and 20 percent of it is still forested, but we have lots of people packed in. As a matter of fact, we probably have more people per square foot than you have cattle out there. I know you have a lot of cattle.

So we invite you. We are pleased to see you here, Governor.

Senator **Bentsen**. Senator, when you made reference earlier to the Houston ship channel, let me say that with studied effort and enough investigation and good legislation, as we finally passed in this committee, things can be done for problems like that one. At one point before we passed that legislation the Houston ship channel had been said to be too thick to drink and too thin to plow. It had the highest octane rating of any body of that size in the country. Now you have fish swimming there and a great deal of progress has been made.

Governor **White**. They are the toughest fish and shrimp you have ever seen, though.

Senator **Bentsen**. Thank you very much, Governor.

Governor **White**. It has been an improvement, no question about it. Thank you, Senator.

Senator **Bentsen**. Thank you. I appreciate it.

I would like to say to the other witnesses that we have quite a number of witnesses here and we will be having another hearing in July at which Government witnesses will be testifying.

In addition, we have some more conflicting things that are coming up at 11, but we will continue with these hearings. I would ask all witnesses to hold their statements to 5 minutes oral and we will take their entire statements for the record.

The next witnesses will be a panel with Brian Berwick, assistant attorney general for the State of Texas who has the jurisdiction over the enviornmental protection division; and Mr. Rick Gimello, who is the executive director of the New Jersey Hazardous Waste Siting Commission.

Gentlemen, we are very pleased to have you here. Mr. Gimello, if you will lead off.

STATEMENT OF RICK GIMELLO, EXECUTIVE DIRECTOR, NEW JERSEY HAZARDOUS WASTE SITING COMMISSION

Mr. **Gimello**. Thank you, Senator.

Senator **Bentsen**. This is a 5-minute timer, I am advised.

Mr. GIMELLO. Thank you, Senator. Good morning. My name is Richard Gimello, and I am the executive director of New Jersey's Hazardous Waste Facilities Siting Commission. I am pleased to be here this morning to provide you with some of the commission's thoughts with regard to ocean incineration.

Senator, Chairman Dodd expresses his regrets. He had a previous engagement.

I will focus my comments today primarily on the need for ocean incineration, how that need could or should be established and, to a lesser extent, provide some comments on the proposed EPA ocean incineration regulations.

Created in 1981, the siting commission in New Jersey has the responsibility of analyzing current hazardous waste generation and management practices in New Jersey; projecting future demand for hazardous waste treatment, storage and disposal facilities; determining the number and types of facilities necessary to manage New Jersey's hazardous waste; and finally, designating sites for those facilities.

The siting commission has been struggling to quantify New Jersey's hazardous waste management needs in the belief that unless and until New Jersey's specific facility requirements can be demonstrated, any attempt to site new facilities will fail.

We have completed our efforts and the commission's conclusions are reported in detail in the recently published "New Jersey Hazardous Waste Facilities Plan." The plan is a comprehensive management strategy for meeting the treatment and disposal needs of our State. The facilities plan is also a policy document which promotes a new hazardous waste management hierarchy in New Jersey. This hierarchy, in order of preference, includes: Source reduction, recycling of waste, recovery of both energy and usable parts, treatment and incineration, and secure disposal.

The commission has assigned current and future hazardous waste streams to those technologies deemed most appropriate given this management hierarchy. The commission has concluded that New Jersey has a shortfall in incinerator capacity and disposal capacity. The commission is therefore seeking one or more land-based rotary kiln incinerators with a total capacity of between 50,000 to 75,000 tons per year and an 80-acre land emplacement facility, which should provide capacity for 20 years.

A rotary kiln incinerator is specified in the plan because of its versatility in burning sludges, solids, and liquids.

The commission's study indicates that given anticipated source reduction measures and the State's Superfund cleanup activities, an ever-increasing percentage of New Jersey's waste will be sludges and solids, which cannot, in a practical fashion, be incinerated on marine vessels.

The New Jersey facilities plan estimates that up to 131,000 tons of hazardous waste should be available for incineration in 1988. Of that amount, 46,000 tons would be liquids, while solids and sludges account for 85,000 tons, or 65 percent, of the total incinerable hazardous waste stream. Our data further indicate that these solids and sludges, as a percentage of the total waste stream, will increase.

It should be noted that in quantifying New Jersey's needs for new facilities, the commission has been cognizant of regional needs and has attempted to avoid a purely parochial position. The commission has factored imports of hazardous waste at 1983 levels—a total of 166,800 tons per year—into New Jersey's waste projection.

The commission urges that EPA undertake a similar comprehensive effort to evaluate objectively the need for ocean incineration. Furthermore, it should be noted that both the Ocean Dumping Act and the London Dumping Convention require such an examination.

The Ocean Dumping Act states that ocean incineration can only be permitted when: One, there is a need for such disposal, two, after a consideration of land-based alternatives and recycling, and three, after a consideration of the effect of such ocean disposal on human health, marine life, and other uses of the ocean.

The London Dumping Convention Treaty likewise prohibits the United States and other signatories from going forward with an ocean incineration program unless the countries carefully consider the availability of land-based alternatives and the effect of ocean incineration on marine life and other uses of the sea.

I think it is evident that EPA cannot issue regulations under the Ocean Dumping Act which violate either the terms of that act or the terms of the London Dumping Convention. However, at this point in time it is our opinion the proposed regulations do not indicate that EPA has adequately analyzed any of the critical and mandatory considerations required by the act and the convention.

To date, EPA has failed to demonstrate the need for ocean incineration. In fact, the proposed regulation states that:

> [N]eed will be presumptively demonstrated if ocean incineration poses . . . no greater risks than practicable land-based alternatives.

This is plainly inconsistent, in our view, with the London Dumping Convention's presumption against ocean dumping and in favor of practical land-based alternatives.

Under this treaty, the United States must first demonstrate that land-based facilities and methods of treatment are inadequate to handle our liquid waste disposal needs. This determination should be made before EPA embarks on the major ocean incineration program proposed in the regulations.

The definition of need contained in the EPA proposed regulations seems exceptionally narrow. To presume the need exists one must go beyond a comparison of risk, which is the standard currently proposed by EPA, to a consideration of existing and future requirements. Such an expanded definition would allow EPA to factor the efforts of States like New Jersey, which have actively sought to define technological needs, into the permit review process.

The question of need is further complicated by the inadequacy of the EPA's commercial incineration market study.

In appendix C of EPA's incineration study, the Office of Solid Waste advises against using the national survey data to develop regional waste generation and management estimates because the data have been "interpreted beyond statistically valid limits" and therefore suggest only possible outcome. Given the vast changes in both the market and the regulations, they do not present an accurate picture of current conditions.

More reliable information regarding the types and quantities of hazardous waste currently being generated exist on the State level and EPA should consult with individual States.

For example, there are 24 States that have laws specifically dealing with the siting and development of new commercial hazardous waste facilities. These States have recently formed an organization entitled the "Consortium of State Hazardous Waste Siting Authorities, Inc." This majority of the consortium's members have either completed or are in the process of defining their waste management needs. These State-based studies will more accurately define the regional market needs and the technological preference of individual States. This information will be shared with EPA as it becomes available; however, it is not reflected in the current statistics used by EPA.

The New Jersey Siting Commission and the consortium are extremely concerned that the integrity of individual State siting processes not be preempted or compromised by a Federal push toward ocean incineration.

It is recognized by proponents and opponents of ocean incineration alike that no one State, and in most areas of the United States no one region, will generate the volumes of liquid waste necessary to support an ocean incineration operation. Therefore, EPA must work closely with individual States to avoid potential conflicts with State siting efforts which would be imposed by the Federal designation of specific burn sites.

It is the commission's hope that EPA will recognize that all State and local regulatory requirements, including specific siting efforts, be reflected in any Federal regulation and/or siting procedures.

Senator **Bentsen**. Your time has expired.

Mr. **Gimello**. In summary, Senator, the Commission feels that the need has not been demonstrated to the degree we have undertaken in New Jersey. As a member of the consortium, we know that more current information is available, and we hope that EPA will seek our advice in that regard.

I thank you for the time.

Senator **Bentsen**. We will hold questions until both witnesses have testified. Mr. Berwick, if you would proceed.

STATEMENT OF BRIAN BERWICK, ASSISTANT ATTORNEY GENERAL, ENVIRONMENTAL PROTECTION DIVISION, STATE OF TEXAS

Mr. **Berwick**. Senator Bentsen and Senator Lautenberg, my name is Brian Berwick and I am an Assistant Attorney General with the Environmental Protection Division in the Texas Attorney General's Office.

Attorney General Jim Mattox of Texas thanks you for inviting him to testify here today and sends his regrets. He went to Alaska for a conference and he caught a cold and, as a result, he was unable to come. He felt as though he ought not bring his cold here to Washington, DC, that he ought to keep it in Texas.

I would like to discuss some of the legal issues that have already been touched upon by Governor White that surround ocean incineration.

I want to make clear at the outset that there is a lot of legal uncertainty in the area, and my remarks should not be construed as endorsements by the State of Texas of any given line of legal argument. Instead, they represent my best prediction about how a judge would rule if certain issues arose today.

I am very concerned about whether private parties economically injured by accidents at sea involving toxic wastes would have adequate legal remedies available to them. If there was a catastrophe, without a doubt there would be severe injury; for example, to commercial fishermen. Naturally, such plaintiffs would seek theories under which to sue the vessel and its owner for compensatory damages. Their best hope and, indeed, probably their only hope would be the law of maritime tort. This is a body of Federal law that is supplemented by Federal statutes.

The hypothetically injured shrimper whose business has been injured would immediately be met by a claim by the vessel owner of limitation of or exoneration from liability under the famous Limitation of Shipowners Liability Act, which was passed in 1851. This limits the liability of an owner for tort claims to the value of the vessel and the freight charges owed to it after the incident causing the injury. The exception is if the vessel was unseaworthy and the owner knew about it. The ordinary perils of the sea, including negligent navigation, which causes the great bulk of marine accidents, do not constitute unseaworthiness. So if the spill of waste that injured the Texas shrimper was caused by human error, which is the most likely event, the owner's liability will be limited.

If the vessel had a high value after the injury, high enough to cover the many claims, then the shrimper and other injured people would have some hope. But if the vessel sank, let's say, or was destroyed by fire, then the shrimper would get a pro rata share of a very small fund indeed. He might get a pro rata share of nothing.

Nor does it help if the owner carried a big liability policy because under liability policies, the insurance company pays off only if the insured party is held legally liable. The insurance company and its lawyers who come to the defense of the shipowner can raise any defense that is available or limitation that is available to the shipowner. Without a doubt, they would raise the Limitation of Shipowners Liability Act, and at least they would have an excellent chance of prevailing on that.

Well, as bleak as the picture is for a shrimper, at least he has a better hope than people whose livelihoods depend only indirectly, in quotes, on the Gulf of Mexico. A recent fifth circuit case extended the famous Robins Dry Dock Doctrine and made clear that except in a very narrow set of circumstances, people who are just, in quotes, economically injured could not recover any money at all from the vessel or its owner. The case I am speaking of is the *Motor Vessel Testbank* case which was decided earlier this year.

The Louisiana court found that indirect economic loss, even though it is foreseeable, is not compensable in maritime tort except for those who sustain physical damage to a proprietary interest. What happened there was there was a large spill of pentachlorophenol at the Mississippi Gulf outlet, and as a result the U.S. Coast Guard embargoed a large area of waters, waters which a particular group of fishermen were used to fishing in and making their living out of. They were held to have a cognizable claim. But marina and boat rental operations, wholesale and retail seafood enterprises, restaurants, tackle and bait shops, and the like, were entirely thrown out of court. They were held to have no claim whatsoever. The reason was the fifth circuit said that it is necessary in these very large events to impose a pragmatic limitation on the doctrine of foreseeability.

This is a situation where if a similar spill had occurred on land and there was widespread economic injury, as long as it was foreseeable, it would have been potentially compensable.

I am concerned about the inequities that would be worked by the application of both the Limitation of Shipowners Liability Act and the M/V Testbank Doctrine to a catastrophe involving an incinerator vessel. Often it is going to be difficult enough to prove a causative link between the spill of waste and the injury complained of. Our system of justice does require the plaintiff to bear this burden of proof. If they can climb that high tree, then they ought to be fully compensated.

Everybody with foreseeable injury should be fully compensated. The present scheme of law falls far short of ensuring such an outcome.

The EPA regulations really do not touch on this. EPA argues they cannot touch the liability issue.

You have asked me to comment, and I will do so very briefly, so as to summarize, about the coastal zone management plan and whether, if Texas had a coastal zone management plan, it would give the State a measure of additional influence over its own destiny.

In my opinion, it is very unclear whether that is so. The reach of a coastal zone management plan, if Texas had one, which I wish it did, beyond the coastal zone itself, which in Texas goes out to about 9 miles, three marine leagues, the reach of it is very unclear. It is by no means certain that a coastal zone management plan would help.

Senator **Bentsen**. Thank you.

I will defer my questions to Senator Lautenberg. He has another commitment. If he would proceed now with any questions he might have.

Senator **Lautenberg**. I thank you, Mr. Chairman, and thank the witnesses for very enlightening testimony.

Mr. Gimello, welcome, from one New Jersian to another.

Mr. **Gimello**. Thank you, sir.

Senator **Lautenberg**. We feel our needs are special in particular, but of course what happens in New Jersey is indicative of what we can expect around the rest of the country because we have to work so much harder to solve the siting problems, as I described before.

I want to focus my questions to you on the commission's activities. You said that the need has not been ascertained. Of course, until that need is ascertained, there is no point in going ahead with demonstration projects where there is still some uncertainty.

But just to clear the record, what process will the commission use to find a site for land-based incinerators? What is going to happen there?

Mr. GIMELLO. We are currently, Senator, searching. We have on the books in New Jersey very specific siting criteria which eliminate large portions of the State from consideration and direct us to other areas.

We are this summer, through an engineering contract, searching for sites to meet the needs specified in our management plan. We hope that by the end of the year we will have identified potential sites for the uses we indicate.

Senator LAUTENBERG. How many communities have welcomed a site facility?

Mr. GIMELLO. I must say, Senator, we haven't had any welcome mats.

Senator LAUTENBERG. That is the problem. Everybody is saying well, OK, let's put it over there. What kind of reaction have you seen engendered by the consideration of ocean incineration?

Mr. GIMELLO. The proposal for a port facility in Newark, NJ, dates back quite some time in the State of New Jersey. There is solid citizen, and I think it is fair to say, political, opposition to that proposal. The proposer has not submitted an application to the siting commission, and when and if he does so, we will review the application objectively against the criteria we have established. So our management plan, although it specifies our specific needs, is not an outright denial of any kind of permit, ocean incineration included.

Senator LAUTENBERG. But you talked about that kind of a site. You are talking about a site for loading the materials.

Mr. GIMELLO. That is correct.

Senator LAUTENBERG. That engenders the kind of hostility we know so well when the community feels that there is too much risk associated with it.

You say you have the New Jersey criteria, for establishing land incineration sites. Do you feel you are going to be able to come up with something that doesn't have such resistance, that we are going to be able to say OK, this is it, and this is where it is going to be?

Mr. GIMELLO. Senator, I don't think anyone expects a community will not resist a proposal. Our siting act is a very lengthy process that attempts to equalize the decisionmaking and include the citizens in that decision as early as possible. The commission has the final say.

I do feel that we will be successful because of the dire need that we have, and you are so well aware of, with regard to Superfund cleanup. I think we will get there, sir.

Senator LAUTENBERG. Unfortunately, the need is not as apparent in many cases as is the risk apparent. That is the problem we have.

Those involved with the longer range view of where our State is going in dealing with waste, hazardous and otherwise, have some tough decisions to make. It is never going to be totally popular. Do you see a role for ocean incineration for diposal of low-energy liquid waste?

Mr. **Gimello**. Senator, I would like to say that I think ocean incineration is an option that needs to be examined. Unfortunately, it has regional consequences, and I think those regional consequences have to be factored into the decision.

Now, nothing I said today and I hope nothing was interpreted to indicate we do not think it needs examination. It certainly does. And we will examine it if we get an application. So I think there is a role.

The question then becomes is there a need for it? Should we go to the ocean? Are there alternatives? And in that context we will evaluate any application.

Senator **Lautenberg**. It is fair to say, isn't it, Mr. Gimello, that we can't rule out the review of all alternatives? I mean there just is no way that we can satisfy all the interests, all the views of the community, by taking one course or another.

Mr. **Gimello**. I certainly concur, sir.

Senator **Lautenberg**. A last question, Mr. Chairman. Let's assume that EPA finalizes its regulations and allows the ocean incineration. How would the commission decide whether to allow New Jersey to be used as a transfer site for ocean incineration vessels? What is the process there?

Mr. **Gimello**. The key process there, Senator, is first of all, does the proposed port meet the siting criteria; and then is it necessary, given the kinds of needs that New Jersey has identified in our plan; and then to look at the regional implications.

We haven't seen a specific proposal. We are not sure of the kinds of wastes that will be going through the port or might go through the port for burning at sea. So once we have that kind of information, we will judge it against the kind of market studies and the data base we have in place in New Jersey.

Senator **Lautenberg**. I thank you, Mr. Chairman, for your patience and your distinguished leadership. You recognize some of the scheduling problems we have. You were kind to let me take this time. Thank you very much.

I would like to submit additional questions for the record.

Senator **Bentsen**. Of course. Without objection, that will be done. [See p. 74.]

Senator **Bentsen**. Gentlemen, you have raised some troubling questions about the liability issue. Mr. Berwick, you might answer this. This question of compensable damages apparently goes beyond the proposed liability regulations of the EPA; is that correct?

Mr. **Berwick**. Yes, sir. EPA regulations require so and so much insurance. They don't say exactly what the policies shall say, and that is all important.

What I mean is there is insurance and insurance. There are all different kinds. The present proposed regulations are extremely general in what they say about the amount of coverage and the kind of coverage. But beyond that, again, to speak of insurance and having *x* amount, let's say a huge amount of insurance, is to beg the question: What is the basic liability? You must reach the liability question before you reach the question of coverage by a policy.

Senator **Bentsen**. To get into third-party damages and recoveries is particularly troubling, it seems to me. Do you have any proposed changes that might be made in the law to address that kind of a concern?

Mr. **Berwick**. I believe that EPA could challenge the industry to waive the Limitation of Shipowners Liability Act as a condition of receiving a permit. In addition, they could challenge them to waive the protection of the Robins Dry Dock/MV Testbank Doctrine. And if that were done, then they would indeed be exposed to liability and their insurance coverage would have meaning.

At present, to carry an enormous amount of liability insurance for third-party type liability—injured fishermen, shrimpers, hotel owners, and the like—well, that would be cheap coverage because there is very little likelihood that liability would ever be imposed. So you might have a fair-sized premium for the first 100,000, but you are probably not going to pay too much for each succeeding 100,000.

Senator **Bentsen**. Where would you draw the line? Suppose you have a regular cargo vessel carrying some very powerful chemicals. How do you differentiate in the liability there?

Mr. **Berwick**. That is a good question, Senator. I think the answer is this: Without a doubt, a lot of very hazardous material does move upon the sea. Of course, I suppose in terms of pure volume and weight the largest fraction of that material would be crude oil. Crude oil is greatly to be distinguished and, indeed, other more hazardous cargoes are greatly to be distinguished from the extremely toxic and extremely persistent highly refined synthetic waste products that are presently contemplated as being appropriate for ocean incineration. I know of nothing as toxic and as persistent as PCB's that presently travels in bulk across the open ocean.

Senator **Bentsen**. Gentlemen, you raise some questions that I think are very important in these hearings. We have the limitation of time. So what I am going to do is ask that you address certain written questions that we will send to you and that you help us complete the record. I have the concern of other witnesses that have yet to be heard.

Thank you very much.

Mr. **Gimello**. Thank you, sir.

Mr. **Berwick**. Thank you very much.

Senator **Bentsen**. Senator Mitchell, who has a deep interest in this and is attending another meeting at the present time. He has asked that I make his remarks a part of the record. We will do so at this point. I will also include a statement from Charles Graddick, the attorney general of Alabama.

[The statements follow:]

George Mitchell

OPENING STATEMENT

SENATOR GEORGE J. MITCHELL

SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

JUNE 19, 1985

Mr. Chairman: There are few issues which generate the strength of opinions as does the concept of incineration at sea of hazardous wastes. I am familiar with the key elements of the issue, but look forward to these hearings as an opportunity to hear the view of both sides in greater detail.

Incineration at sea involves a large number of technical problems and obstacles. I expect that some and perhaps all of these obstacles could be overcome in time. These technical problems, however, can dominate the debate on this issue and may cause us to overlook other important considerations.

I am concerned, for example, about the soundness of any long term plan for disposal of hazardous wastes in the ocean environment. There is a great deal that we do not now about how these pollutants, even the low volumes left after incineration, would affect marine systems. While it may be fruitless to expect a risk free method of hazardous waste disposal, ocean incineration may be a gamble leading to irreversible damage of the oceans. Because we know how complex marine environments are and how little we know about interactive effects, we should seriously consider a policy which demands that plans for disposal in the ocean meet a higher standard than more conventional disposal methods.

I am also concerned that, even if we determine that incineration at sea is the best disposal method available, we may never be able to effectively account for the risks of accidents at sea. An accident, such as a collision in a busy harbor or an explosion at sea could result in massive loss of hazardous pollutants at sea. The environmental effects of such an accident would be far greater than the oil spills we remember from the beginning of the environmental movement. As any Maine fisherman would tell you, unpredictable events are predictable at sea.

Finally, I am concerned that the availability of an "out of sight, out of mind" method for disposal of hazardous waste may become an easy alternative, even in light of potential problems. The demand for a disposal option is great. There are estimates that we may see a fleet of up to 30 incineration ships from a number of ports. While the program under consideration today is much more modest, it is not clear what would prevent a small program from quickly growing large.

Despite the many technical problems and the difficult policy issues I have just mentioned, many argue that incineration at sea poses a lower risk to the public than do land based incineration or other disposal options. While I have reservations about incineration at sea, it is important to make any policy regarding at sea incineration a part of a larger policy which accounts for the pressing need for some viable disposal method.

Mr. Chairman, I look forward to hearing the views of witnesses at the hearing today and at the hearing scheduled for mid July. I hope that these hearings will give us a chance to look closely at both technical problems and the difficult, broader issues posed by the concept of incineration at sea of hazardous wastes.

STATEMENT OF CHARLES A. GRADDICK
TO THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
JUNE 19, 1985

Mr. Chairman, members of the Committee on Environment and Public Works:

My name is Charles A. Graddick. I am presently the elected Attorney General of Alabama and I appreciate the opportunity to be here today to present this short statement on behalf of the people of the State of Alabama.

For more than three years my office has been combatting the current proposal to load organo-chlorine hazardous and toxic waste from the port of Mobile and incinerate them in the Gulf of Mexico. We have attended a number of public hearings in Texas and in Mobile, Alabama over the past two years to voice opposition to EPA and CWM proposals. Most recently, we attended the EPA sponsored hearing on its draft ocean incineration regulations held in Mobile on May 2, 1985, to voice our opposition to the regulations. While we have numerous technical objections to the proposals, we believe that there are basically three glaring faults with the regulations.

First, the EPA has not adequately demonstrated the need for ocean incineration. The EPA "needs" study, in my view, is a jerry-rigged affair, designed to justify conclusions already rendered by the agency. It is worthy of note that the "needs" study was released by EPA after the proposed regulations were submitted. In addition, even if one considers the data which EPA utilizes in its "needs" study as being correct, there is no clear demonstration of the necessity for ocean incineration.

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We are concerned that ocean incineration, if it becomes a national policy, will divert funds, and decrease the drive to find new and more suitable means of destroying hazardous and toxic wastes; such as are now being investigated. EPA's scientific advisory board in conducting its review of EPA's ocean incineration program, listed many glaring gaps in data and conclusions made by EPA which were not scientifically supportable, such as the relationship between combustion efficiency and destruction efficiency. Our reading of the scientific advisory board's report, both the draft report and the final report, leads us to the conclusion that considerable research is necessary even before additional research burns should be allowed.

Second, the EPA regulations make no provision for consideration of the background or the past record of would-be permittees for ocean dumping permits. It would seem to us that one should not entrust activities which are as critical as this to companies or individuals who, in the past, have demonstrated their inability or unwillingness to comply with current regulations and environmental laws. We suggest that the absence of regulations which not only allow EPA to consider such matters in granting ocean dumping permits but mandate EPA's consideration of these matters fatally flaws the proposed regulations.

Third, and perhaps most important to the state of Alabama, no federal agency, at present, has adequate guidelines or regulations which address port or loading facilities for vessels which would be transporting hazardous or toxic wastes. Under the most recent proposal for loading hazardous or toxic waste, the would-be permittee chose the port of Chickasaw, Alabama as its loading site. The physical location was approximately 50 miles from sea lanes and in the northern part of Mobile Bay in an area with difficult navagation hazards; an area with ongoing marine construction, an area without adequate land transportation access routes and without adequate fire protection facilities, an area in which the local officials lack necessary training in spill containment or clean-up procedures and an area in which a marine spill of hazardous waste could eliminate the oystering and shrimping industry in Mobile Bay for the foreseeable future.

Currently, there are no guidelines or regulations which adequately address these ligitimate concerns. It is our understanding that the Coast Guard will propose new regulations which may address some of these concerns, however, they will not be proposed until March 1986. EPA's scientific advisory board, as well as EPA's consultants, have concluded that the most dangerous part of the ocean incineration process is the loading and transportation to the burn site. Without addressing this critical part of the ocean incineration process before allowing even research burns seems to be reckless on the part of federal agencies and certainly not in the best interest of the citizens of Alabama.

A measure of the concern of Alabamians related to the use of Chickasaw or Mobile as a port facility and for the ocean incineration program in general is the fact that approximately 800 people attended the EPA May 2, 1985, hearing in Mobile, and approximately 1000 Alabama residents have signed petitions supporting the Boxer Amendment. Copies of those petitions are attached to this statement for inclusion in the record.

I appreciate the opportunity to present these remarks.

Senator BENTSEN. Our next panel will be Sue Ann Fruge who is coordinator of the Gulf Coast Coalition for Public Health in Harlingen, TX; Ms. Sharron Stewart, coastal resources chairman of the Texas Environmental Coalition, Lake Jackson, TX; Mr. Kenneth S. Kamlet, director of Pollution and Toxic Substances Division, National Wildlife Federation; Sally Lentz for the Oceanic Society of the Ocean Policy Office; and D.W. Bennett, executive director of the American Littoral Society from Highland, NJ.

I must ask that you limit your testimony to 5 minutes maximum and then we will have to again resort to written questions because of the substantial number of witnesses that wanted to be heard today.

Ms. Fruge, if you would proceed, please. Good to have you back. Nice to see you.

STATEMENT OF SUE ANN FRUGE, COORDINATOR, GULF COAST COALITION FOR PUBLIC HEALTH

Ms. FRUGE. Thank you. I also have with me Jackie Lockett, who will assist me in any questioning you might have.

My name is Sue Ann Fruge, representing the Gulf Coast Coalition for Public Health, a broad-based, grassroots organization located in the Rio Grande Valley of Texas.

Two years ago I would have naively testified about the problems existing with the technology. These are found in my written testimony.

I also would have ardently pointed out some of the glaring problems with the proposed regulations, also noted in my written testimony.

That might have been the extent of my comments, then, not today. Many of us have come to the conclusion that technology, science, nor regulations have anything to do with the headlong rush toward ocean incineration. The decision to do so is quite simply politics.

This fact, frequently suspected, was confirmed for us recently when Dr. Tudor Davies, EPA hearing officer for proposed regulations, met with local elected officials and citizens in Brownsville, TX. When asked whether science or hearing attendance numbers would affect the decision on ocean incineration, he stated, "It will be a political decision." And he confirmed that remark later in Washington.

What the coalition and many others perceive as the real issue at hand is the apparent ability of a large and powerful company, Waste Management, Inc., and the Maritime Administration to grease the skids to an extent that ocean incineration will be permitted even in the absence of adequate scientific data, and over the objections of scientists, State governments, impacted citizens and affected economic interests.

Why the push from Chemical Waste Management? Profit. To some observers, the headlong rush began in 1980 when they purchased an incinerator ship out of bankruptcy and awakened to the realization that the European market would soon be drying up with the anticipation of the Oslo Convention's intent to terminate ocean incineration.

Waste Management, of which Chemical Waste Management is a subsidiary, is the world's largest waste disposal corporation. Impressive, second only to its ability to make phenomenal profit, it seems, is its inability to stay within the laws of these United States.

According to the Wall Street Journal, the EPA has determined more than 100 civil and several possible criminal violations. It was when we began to study the handling of these violations that we also began to question the relationship that existed between this company and the U.S. Environmental Protection Agency.

In December 1981, Chemical Waste conducted the first research burn of PCB's in the Gulf of Mexico. The testing equipment malfunctioned and little data was available, yet the test was deemed a success by the EPA.

It was on that burn that dioxin, a chemical inappropriate for ocean incineration, was burned aboard the *Vulcanus*. Changes were made in the permit after the public notification period expired. EPA officials involved could not explain who made this liberating change or when or why it was made. Chemical Waste made from $10 to $25 million for this and the subsequent test burn.

The State of Alabama felt strongly enough about that that they are conducting their own criminal investigation. And I might add, as of yesterday, the vice president of the southeast region of Chemical Waste Management, plus the site manager at the Alabama site, have pleaded the fifth amendment.

The second test burn was monitored by the EPA, and because the company was not charged for the expense, taxpayers footed the bill, estimated at $250,000 to $300,000. According to sources, "The EPA allowed CWM carte blanche in writing its own permits."

These test results, the bulk of scientific data available on U.S. ocean burns, were assessed for the EPA by TRW, Inc., while the company was simultaneously contracted to Chemical Waste Management.

Mr. James W. Sanderson, adviser to Anne Gorsuch, was the recipient of payroll checks from CWM and EPA simultaneously for several months. Mr. Sanderson attempted to influence decisions on the issuance of permanent permits to Chemical Waste.

Although investigated by the Justice Department for conflict of interest, the charges were dropped for insufficient evidence.

Interestingly, Ms. Saundra Brown Armstrong, Justice Department attorney handling this case, was elevated to the position of Commissioner of the Consumer Product Safety Commission soon after.

In March 1983, the State of Alabama filed suit against the EPA for attempting to expeditiously permit the construction of PCB storage tanks below the 100 year flood plain, clearly prohibited by EPA. The suit centered around a memo from Rita Levelle suggesting the exercise of enforcement discretion by region IV in that matter. The tanks were to be used for loading the Vulcanus ships.

In March 1984, Mr. Steven Shatzow, EPA officer, issued a recommendation for the issuance of operational permits to Chemical Waste Management that a research burn of over 3 million gallons of PCB's be executed. That amount corresponded with the volume of PCB's the company had illegally stored in Emelle, AL.

A regulation development workshop was held in June 1984. Representatives from the attorney generals' offices of three States and numerous environmental groups were invited to provide input. Prior to the meeting, a fully developed set of regulations leaked to the opposition participants. When the EPA officials were confronted with the document, they denied any knowledge of its existence.

During the rather emotional revelation, a member of industry leaped to his feet and was overheard exclaiming, "That's a privileged document. Only industry is supposed to have it."

The questionable circumstances surrounding the Maritime Administration's $55 million loan guarantee are covered in the written testimony. A recent verbal guarantee of another $13.6 million infusion, plus the deletion of a requirement that the ships conform with EPA regulations, has reinforced public skepticism.

Senator BENTSEN. Ms. Fruge, I will have to ask you to summarize now.

Ms. FRUGE. All right.

After 3 years of observing the absolute refusal or inability of EPA to respond to many valid concerns raised by State governments and coastal residents, we felt compelled to address the key issue—the politics.

We appeal to you to first move this technology above reproach by supporting Senate bill 1039. The 3-year moratorium for research will remove the issue from the arena of favoritism.

Second, we implore you to conduct a penetrating investigation into the proliferating irregularities surrounding this quick fix technology. Without it, public acceptance is virtually nil.

At this time I would like to present to you petitions with 19,500 signatures opposing ocean incineration—6,900 from Texas, 1,000 from Alabama, and 2,500 from the Lake Charles Environmental Cleanup supporting the moratorium legislation—all representing the massive degree of concern felt by coastal residents.[1]

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[1] The petitions referred to have been retained in committee files.

Senator BENTSEN. Thank you, Ms. Fruge. We are pleased to have your petitions and your testimony, which we will take in its entirety. We appreciate your continued concern on this very important issue, and particularly the fact you are up here from my hometown area.

Ms. FRUGE. Thank you.

Senator BENTSEN. Sharron Stewart, we are very pleased to have you here from Lake Jackson. We are pleased to see you again. Won't you please testify.

STATEMENT OF SHARON STEWART, COASTAL RESOURCES CHAIRMAN, TEXAS ENVIRONMENTAL COALITION

Ms. STEWART. Thank you, Senator.

We have expressed our concerns since 1974 about the risks of ocean incineration. If land-based incinerator proponent, Edward Kleppinger, is correct in his estimation that:

> Catastrophic occurrences to the Vulcanus cannot be disregarded. If the Vulcanus ever had to dump a cargo of only 500,000 gallons of PCB waste, about 5 million pounds of liquid waste would be released, amounting to 2.5 million pounds of PCB's. The quantity would be sufficient to pollute a circle of a radius of 200 miles to a depth of over 4,500 feet. Dumping liquid PCB waste of the quantity suggested would be sufficient to deteriorate all life in the Gulf of Mexico.

Then we are indeed facing a serious problem.

Along with looking at the actual need for ocean incineration, we must look at the impact of the technology as proposed, as it affects the use and development of other waste removal and destruction methods. What happens to the economic incentives for developing waste reduction, reuse, stabilization, and high efficiency destruction technologies?

We fear that by providing the cheap quick fix to the problem of waste disposal, as in the Environmental Protection Agency proposed regulations, the process by which we develop a proper waste management strategy will be skewed and, ultimately, far greater environmental harm will occur.

We also endorse the Boxer-Cranston legislation. Our strongest concern is the inclusion of the operating history of the applicant in this or any other business. Past compliance history is an indicator of how one can be expected to perform in the future. Such a provision is intended to be discriminatory, in order to offer protection to living resources.

If Texas can recognize the need for such a provision, surely EPA can.

In addition, we find it incomprehensible that EPA would eliminate the hearing examiner's report and the adjudicatory proceeding at a point where it would benefit the public and keep it in for permit modification, where it would benefit the company.

Liability is a serious issue. Complete indemnity from a single catastrophic event or from any potential discharge must be provided. That compensation, both in amount and mechanism for distribution, must be clarified for both land and ocean based waste management activities. Those parties most directly affected—commercial and sports fishermen, related shoreside support, and tourist industries—should be able to recover full compensation. This may mean that in order to get any kind of permit, the vessel owner/

operator will voluntarily have to give up his right to the protection of the 1851 Limitation of Shipowner's Liability Act.

The research plan seems to encompass only one kind of vessel and only one kind of incinerator technology. Like the regulations, the research plan gives credence to the feeling that a special relationship exists with one applicant and EPA.

Once these proposed regulations are final, operating permits can be issued without having in our estimation adequately addressed the needs determination, the background research on the site, or the critical research yet to be done on the surface microlayer. We are also concerned that EPA's definition of initial mixing will allow them to ignore the immediate reaction when the plume hits critical surface area of the ocean.

We do not find 10-year permits acceptable and suggest they go back to the 3-year permits.

Concerning the gulf site, our first concern is the attempt by EPA to grandfather the site by publishing the site description and the coordinates along with the statement that use of the site may be up to 10 years in the Federal Register is an attempt to keep the public from being allowed to follow the procedure properly.

If one looked for a worse site designation for ocean incineration than the Gulf, it could be found. You could do it in the Great Lakes.

In 1974, the site selection was based on the proximity to a large percentage of chemical waste producers. It was generally accepted that there were not any living resources of any value off the Continental Shelf. Traffic patterns for vessel transportation were not considered important. No lightering occurred in the Gulf of Mexico. The occurrence of oil and gas rigs were minimal and predominantly only in shallow water.

In 1985, the world has changed. Oil rigs are becoming common sites in depths of 1,000 to 1,700 feet. Oil tankers traverse the gulf from 50 to 100 miles offshore, transferring cargo to smaller vessels. Vessel congestion for oil and chemical products is the heaviest in the world.

The burn zone once considered an ocean wasteland now supports a major commercial fishery for black fin and yellow fin tuna. It is a breeding ground for the giant blue fin tuna, which is caught all the way to Newfoundland.

Under the MFCMA, we now prohibit the Japanese from the taking of broad-billed swordfish in the Western Gulf because it is the only known area where small juveniles are found. Kingfish, snapper, menhaden, grouper, and tile fish are all sought after commercially in the area.

Senator **Bentsen**. I must ask you to summarize now.

Ms. **Stewart**. All right.

In other words, there is a changed condition. We have a complete, highly developed fishery in the burn zone that was not known in 1974.

If this is EPA's idea of the best gulf site, then it appears that no gulf site is appropriate. The public in the past has accepted a tremendous amount of environmental risks. We now have a greater knowledge of the consequences of accepting those risks. The regulations as proposed do not reflect an effort to minimize those risks.

Senator **Bentsen**. Thank you, Ms. Stewart. We will take your statement in its entirety. Your time has expired. It is obvious you spent a great deal of time on this and effort on this. Your concerns are the concerns of all of us. We are appreciative of the comments you made.

Ms. **Stewart**. Thank you, Senator.

Senator **Bentsen**. Mr. Kamlet, we are pleased to have you here. If you would proceed.

STATEMENT OF KENNETH S. KAMLET, DIRECTOR, POLLUTION AND TOXIC SUBSTANCES DIVISION, NATIONAL WILDLIFE FEDERATION

Mr. **Kamlet**. Thank you, Mr. Chairman.

I am Kenneth S. Kamlet, here on behalf of the National Wildlife Federation. We have been close observers and active participants in the events beginning in 1974 which have brought us to the threshold of commercial-scale incineration at sea. It is our carefully considered opinion that ocean incineration can be carried out safely and effectively, when appropriately regulated, and that, at the present time, it is not only a tolerable option but, along with land-based incineration, a preferred one.

There is no inconsistency between our staunch defense of waste destruction ocean incineration and our equally outspoken and longstanding opposition to the direct ocean dumping of harmful wastes.

I will now address the four issues identified in the body of the subcommittee's invitation letter. We will submit for the record in the next few days, with the chair's permission, our responses to the much more numerous questions posed in the four-page attachment to the subcommittee's letter.

First, do EPA's proposed regulations provide appropriate public health and environmental safeguards? In general, we believe they do. Indeed, we believe these safeguards equal or exceed those of any other EPA program. And although we have identified a number of problem areas, we think most of these can be readily corrected in the final regulations.

There may, however, be four or five issues which could ultimately require legislative attention.

These relate, for example, to the current inability to systematically designate suitable and unsuitable incineration loading ports, on the basis of such critical considerations as the adequacy of a port's waste handling and loading facilities, and the productivity and sensitivity of estuarine areas which must be traversed by incinerator ships en route to the burn site from a given port.

Another such issue may relate to EPA's seeming inability or unwillingness to place a cap on the maximum number of burns allowable within a given geographically circumscribed ocean area, such as the Gulf of Mexico.

It may also be necessary to mandate an updating and upgrading of the Coast Guard's spill prevention and materials handling and safety regulations to respond more directly to the unique problems presented by hazardous chemicals.

And, finally, there is the question of whether EPA has the right to impose any liability coverage or financial assurance requirements without the grant of explicit statutory authority to do so.

The second issue posed in the invitation letter regards the efficacy of ocean incineration technology in relation to other existing and emerging waste destruction techniques. We can say categorically that ocean incineration is far better than disposal-oriented methods which do nothing to lessen a waste's hazard potential but which are the dominant means used today in the United States to deal with hazardous wastes. I think it can also fairly be said that ocean incineration is neither universally better nor universally worse than waste destruction in suitable land-based incinerators. They each have their pros and cons.

Newer and better destruction technologies may well be on the way. When they arrive, incineration could well and properly be deemed obsolete, but they are not here yet or very close at hand, and we can't afford to sit back and wait. Incineration isn't perfect, but it is safe and effective and it is the best method we have right now for getting rid of dangerous organic wastes.

The third issue we were asked to address is what effect will adopting large-scale commercial incineration have on efforts to promote waste minimization. We think that as legal and political pressure builds to force waste generators out of cheap land disposal and into more expensive incineration technologies, the incentives to reduce the generation of wastes requiring costly treatment will increase rather than decrease. Cutting off all waste management options at once isn't the answer. Such an approach is far more likely to promote illegal or inappropriate dumping than it is to stimulate waste minimization.

Finally, the subcommittee asked why we were more willing than others to place confidence in ocean incineration. Speaking only for ourselves, the answer is that we have long since recognized that something must be done with the growing tide of hazardous wastes which threatens to inundate us. Destroying such wastes by incineration seems to us the best available means to minimize the risks they pose to the environment as a whole.

While the threat, however remote, of a catastrophic marine spill is a sobering one, it is a threat rendered less terrifying when put in the context of the vastly greater volumes of dangerous chemical cargoes that are transported continuously and generally uneventfully through our inland and coastal waters.

Nor do we agree that ocean incineration should be halted until more research has been done. We know enough to know that it works and that it is safe. We could no more support a more-research, no-action posture toward ocean incineration than we could or would support the administration's misguided efforts to avoid decisive action to control acid rain by invoking the alleged need for more research.

Ocean incineration is an idea whose time has come and one which can help solve one of our country's most troublesome environmental problems. Let's make it as safe as possible. But let's not debate it, condemn it, research it, and prohibit it to death.

Thank you.

Senator **Bentsen**. Thank you for your testimony.

We are very pleased to have Sally Lentz, who is a staff attorney for the Oceanic Society. If you would proceed.

STATEMENT OF SALLY ANN LENTZ, STAFF ATTORNEY, OCEAN POLICY OFFICE, THE OCEANIC SOCIETY

Ms. **Lentz**. Thank you.

I am Sally Ann Lentz, staff attorney with the Oceanic Society's Ocean Policy Office in Washington, DC. The society is a national nonprofit organization devoted to protection, conservation and wise use of marine and coastal resources.

In cooperation with 15 environmental and citizen organizations, the Oceanic Society prepared a briefing report on EPA's draft incineration regulations. We intend to submit coalition comments to EPA by its June 28 deadline. Since those comments will contain detailed analyses on many of the issues raised in your letter of invitation, I ask permission to submit a copy to the subcommittee for inclusion in this hearing record.[1]

Senator **Bentsen**. That will be done.

Ms. **Lentz**. Thank you.

Incineration at sea has never been treated as a panacea for dealing with hazardous waste. When first adopted in Europe, it was a progressive technology, preferable to direct ocean dumping, which was then customary. Yet, then, as now, it was recognized in Europe only as an interim measure pending development of better waste management techniques.

Indeed, under the Oslo Convention, Europeans hope to phase out the use of ocean incineration in the North Sea by the year 1990. The Netherlands and West Germany expect sharp decreases in amounts of waste incinerated at sea because of significant strides in reduction and recovery techniques. The European experience supports our view that many liquid wastes slated for incineration at sea are the most appropriate wastes for recovery and reuse.

The Oceanic Society does not categorically oppose ocean incineration, but we believe EPA's issuance of draft regulations is premature in light of existing uncertainties about incineration technology and the effects of emissions on the marine environment.

Also, the draft regulations do not adequately address a number of important legal and technical concerns. While my written testimony addresses our concerns in detail, I wish to highlight some of the issues that must be resolved before final regulations are issued.

Both the London Dumping Convention and the United States Ocean Dumping Act require a determination of need for dumping. Currently a permit for ocean dumping in the United States will be issued only upon demonstration that no improvements can be made in process technology to reduce adverse impacts and that there are no practicable alternative locations and methods of disposal or recycling.

Existing regulations reflect the spirit in which the Ocean Dumping Act was enacted. The intent is to ensure that the use of ocean dumping will not impede the development of better solutions to hazardous waste management. This goal is achieved by strictly limiting dumping when environmentally acceptable methods for reduction, treatment, and disposal are available on land. This same spirit is reflected in the needs determination required under the London Dumping Convention.

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[1] The document referred to has been received and is retained in committee files.

In direct contrast, EPA's proposal of a generic assessment establishing a rebuttable presumption of need will encourage generators to seek off-site disposal of wastes rather than providing incentives for commercial expansion of source reduction, recycling, and reuse.

Other legal issues include EPA's failure to prepare an environmental impact statement, additional inconsistencies with LDC requirements, and failure to adequately address varying roles and responsibilities of other Federal agencies and other applicable laws.

Contrary to claims by industry, incineration at sea is ocean dumping, both legally and effectively. While most of the waste is destroyed, the remainder is dumped in the environment. It is the uncontrolled release of this remainder that concerns us because we know so little about its content and effects.

What we do know, however, is disturbing. Some scientists suggest that compounds formed in the combustion process and released through the stack emissions may be more toxic than their precursor compounds and may not be detected by existing testing techniques.

In ocean incinerators, all metals contained in the waste stream will be released into the environment, as opposed to land-based incinerators where metals are captured in the scrubber effluent for disposal under controlled conditions.

Some believe the greatest impact from incinerator emissions is on the microlayer, or surface skin, of the ocean which supports a wide variety of plant and animal life, including embryonic forms of commercially important species. Scientists admit there is still much to learn about the role of the microlayer, but current knowledge indicates that it may represent a fundamental link in the marine ecosystem. These uncertainties demand additional research and vigorous monitoring programs.

In addition to these legal, technical, concerns, the Oceanic Society is disturbed by special problems of enforcement associated with incineration at sea and the serious threat posed by accidental spills at sea, which the Coast Guard and EPA have acknowledged are difficult, if not impossible, to clean up. These and other issues are addressed more fully in my written statement.

Senator **BENTSEN**. If you would summarize your statement now.

Ms. **LENTZ**. In sum, EPA is eagerly promoting ocean incineration in the face of overwhelming scientific uncertainty and has yet to resolve numerous legal, technical, and other issues associated with the program. Under these circumstances, EPA's actions are premature and the Oceanic Society cannot support this program.

Senator **BENTSEN**. Thank you very much.

Mr. Bennett, if you would proceed, please.

STATEMENT OF D.W. BENNETT, EXECUTIVE DIRECTOR, AMERICAN LITTORAL SOCIETY

Mr. **BENNETT**. Yes; my name is Deryl Bennett. I speak today on behalf of Clean Ocean Action, which is a New Jersey-based coalition of environmental, commercial, and recreational fishing businesses, real estate, women's professional groups, representing about 100,000 people centered in northern New Jersey with a particular interest in the marine environment offshore and ocean cleanliness and with a real concern about ocean incineration because New Jersey is appealing as a place for a test burn this summer, as a site designation, and Newark is being looked at along with Perth Amboy as loading areas.

We testified at the hearings at Monmouth College in April and rather than go through that testimony again, I would like to submit this written document and then mention a couple of others submitted there also and emphasize, as an earlier speaker did, that the need for this for New Jersey has not been established. This was addressed by Donald Dieasio of the New Jersey Division of Environmental Quality at the hearing at Monmouth College.

I would also mention and submit the testimony of Peter Montague, coeditor of "New Jersey Hazardous Waste News," which is critical of the companies most actively seeking permits to burn hazardous materials at sea. And to coin a phrase that was used to describe a small Texas attorney from Tyler, it is our impression that these people who want to burn wastes at sea are high-pressure operators who can talk the peel off a banana.

We think they have done such with EPA. We don't think EPA can handle these ocean burns. We would emphasize to the Senate committee to look very carefully at that relationship.

Let me try to summarize the concerns from a New Jersey perspective. First, incineration of toxics is a legitimate alternative for destruction of some toxics. Incineration at sea seems attractive, but for all the wrong reasons. It is out of the jurisdiction of local and State governments, which makes it attractive because it is regulated by one agency, but it does also free up those other jurisdictions from having any say, having any concern.

It is a big operation, and big operations always look good, but they seldom work. It takes the pressure off efforts to reduce production of toxic wastes and instead passes toxics down the line to somewhere else. And the somewhere else always appears to end up in the ocean, like sewer sludge and dredge spoils.

We don't believe the need has been established. We don't think the ocean is as safe as land for incineration. We are aware that there is a concern about spilling and damage and collision at sea and spilling of this material on the way to a dump site. Yet, we are told that there are lots of other hazardous substances being carted around offshore that are not spilled.

There is a major difference, and that is the other hazardous materials that are being transported are for sale. They are valuable. This stuff is to get rid of, so that there is nothing to prevent them from spilling it as a benefit on their way out to a site. That is a major difference. Therefore, we think that comparison doesn't work.

Our conclusion is that what is being proposed is not a safe technology. If a technology can be developed to burn toxics safely, it should be done on land.

Thank you, Senator.

Senator **Bentsen**. Thank you very much, Mr. Bennett.

One of the frustrations of chairing one of these hearings is you would like to expand with each and every witness on some of the things they have said which has developed concerns on the issues. Unfortunately, time doesn't permit us to do that. But I will be asking questions of you which I would appreciate your answering for the record, and we will take each of your statements in their entirety. Thank you very much.

Our next panel is Mr. Howard Canter, president of governmental affairs of At-Sea Incineration, Elizabeth, NJ; Mr. William H. Martin, director of technology, Unison, Columbus, OH; Dr. William Brown, director, marine affairs, Waste Management, Inc., Washington, DC; Mr. Jerry D. Neel, senior vice president for operations, Rollins Environmental Services, Inc., Wilmington, DE; and Mr. Vincent G. Grey, president, SeaBurn, Inc., Stolt-Neilson, Greenwich, CT.

Gentlemen, you have been subjected to a number of charges this morning. Now you are going to have your opportunity to answer from your point of view.

Mr. Canter, if you would proceed. You will have to limit your remarks to 5 minutes. We will take your statements in their entirety for the record.

STATEMENT OF HOWARD CANTER, PRESIDENT, GOVERNMENTAL AFFAIRS, AT-SEA INCINERATION, ELIZABETH, NJ

Mr. **Canter**. Good morning, Mr. Chairman and members of the subcommittee. I am Howard R. Canter, chairman and president of At-Sea Incineration, Inc. I was supposed to have accompanying me Mr. Lawrence J. O'Brien, our general counsel, who has some expertise on the question of shipowner's liability. Unfortunately, he is sick, so if there are questions about that, we could reply in writing at a later time.

It has become increasingly evident that many land disposal methods generally do not provide a satisfactory solution to this Nation's hazardous waste disposal problems. Land emplacement options, such as landfills, surface impoundments and injection wells are really forms of long-term storage. Highly toxic liquid wastes stored in some landfills have shown a dangerous tendency for finding their way into ground water systems and bodies of water.

There have been a number of cases in my own State. The case of Jackson Township landfill is one of the examples. Pollution incidents such as these are graphic examples of the major risks to human health and the environment that result from improper disposal methods.

In response to these concerns, you and your congressional colleagues, EPA, and some State agencies, have placed stricter controls on land emplacement. Last fall Congress enacted the 1984 RCRA amendments. In this legislation, Congress declared essentially a national policy to avoid substantial risk to human health and the environment, reliance on land disposal should be minimized or eliminated, and land disposal, particularly landfill and surface impoundments, should be the least favored method for managing hazardous wastes.

Thus, the will of Congress, representing the people of the United States, has been stated.

At a congressional hearing on December 7, 1983, Mr. Jack Ravan, the Assistant EPA Administrator for Water, committed to the development of revised and expanded U.S. regulations within 1 year. It is now 18 months later and the regulations have been published in draft form for public comment and will probably not be promulgated until the end of this year. Yet, I hear that the EPA is being accused of proceeding too rapidly.

Simultaneously, the agency embarked on a comprehensive program to reevaluate ocean incineration. First, their Science Advisory Board studied the use of incineration as a hazardous waste disposal technology and concluded that no human health or environmental impact from either land-based or ocean incineration has been detected.

It is important to recognize that the SAB report also concluded that while additional study of incineration should be undertaken, the technology should continue to be utilized. Basically what the SAB said was the entire world does not know very much about what goes on inside a flame and that we ought to learn more about that, but they had not seen any significant impact on human health.

Second, the EPA's Office of Policy, Planning and Evaluation confirmed a 1979 comparison of land and ocean incineration and found that ocean incineration is less risky to human health. The study also showed that if the amendments to RCRA are properly implemented—and how can the EPA say they are not going to implement the will of Congress—the shortfall in commercial incineration capacity is estimated at seven and a half times the existing capacity.

The EPA has now developed its proposed ocean incineration regulations. This rulemaking, which began in May 1984, was one of the most comprehensive activities that I have ever seen. Fifteen months later, after Mr. Ravan made his commitment, the proposal was presented for public comment, and as I said, it will most likely be promulgated by the end of this year.

In 1982, the critics of ocean incineration demanded that EPA develop these regulations. Now the same critics are saying that the EPA shouldn't develop the regulations.

What else has happened since then? We have produced another 350 to 400 million metric tons of hazardous waste, and we have added hundreds of sites to the national priority list for cleanup.

How much longer can we fool the public into believing that strides are being made to protect their water supplies, their environment, their health, and the health of our children? We have seen the results of improper hazardous waste management practices. Have we learned nothing from Love Canal and Times Beach?

Concerns have been expressed about the potential of a catastrophic accident befalling an ocean incinerator ship. There is, of course, that possibility. But because of the safety and navigation systems incorporated into the modern incineration ships, this possibility is exceedingly remote.

Hazardous waste is hazardous because of the material from which it is made. Much of this material is transported out of our ports every day. I will not go into the details, but the Houston ship channel was mentioned, and 60 million metric tons of this material was hauled in and out of the Houston ship channel in 1982. By comparison, one of our incinerator ships, if it worked full time, at its absolute maximum capacity, could handle 100 to 120,000 tons in a year.

There is also a body of maritime laws and historical experience regarding liability in the event of an accident. There seems to be a great deal of confusion about this, and as I stated, I would like to submit additional written comment on that by our staff attorney.

Senator **Bentsen**. That will be accepted.

Mr. **Canter**. I am confident that ocean incineration is an appropriate technology for destroying liquid organic hazardous wastes.

Senator **Bentsen**. Would you summarize, please.

Mr. **Canter**. All right.

Mr. Chairman, we already know the risks of inappropriate disposal methods. In my own State of New Jersey, there is a pond containing 3 million gallons of PCB contaminated oil. There was a picture of it in the National Geographic magazine last March. I don't want any more of this. I don't want to drink it. I don't want to smell it. I don't want to eat it. I think we should get on with this technology which for 16 years has proven to be effective and safe. Thank you.

Senator **Bentsen**. Mr. Canter, thank you for your testimony.

Mr. Martin, if you would proceed.

STATEMENT OF WILLAM H. MARTIN, DIRECTOR OF TECHNOLOGY, UNISON

Mr. **Martin**. Good morning. My name is William H. Martin. I am director of technology for Unison.

I am pleased to appear here this morning to summarize the technology developed by Union Carbide Corp. and offered through Unison to remove PCB's from electrical transformers. I am submitting written materials for the record describing the transformer service.[1] In my oral comments I would like to highlight briefly those aspects of the process most pertinent to this subcommittee's exploration of alternative waste destruction methods.

The legacy of landfills throughout this Nation and the hazards they pose has led Congress, EPA and numerous scientific groups to urge that alternative disposal methods be developed and implemented as rapidly as possible. The RCRA 1984 amendments, for example, call for an end to all landfilling of PCBs by July 1988 unless EPA rules to the contrary.

Less attention, however, has been focused to date on the disposal problem specifically addressed by the Unison PCB transformer retrofill method, namely the collection of hazardous materials such as PCBs in a manner that makes them available for disposal by other more permanent means.

As I shall describe, the Unison retrofill method is designed to remove and destroy PCB's from electrical transformers. The result is a safer, non-PCB operating transformer, which when much later at the end of its useful life is removed from service for disposal, contains virtually no PCB's in the transformer carcass. Without such technologies, considerable quantities of hazardous materials may still find their way to landfills via transformer carcasses and thus lead to continuing long-term PCB releases to the environment.

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[1] The materials referred to have been received and are retained in committee files.

We should not let PCB's leaching from landfilled transformers become the environmental crisis of the next decade. Union Carbide's technology solves the dual issues of asset rejuvenation and permanent toxic waste disposal.

In 1976, as part of the Toxic Substances and Control Act, Congress banned not only future manufacture but also continued use of PCB's. Among the types of electrical equipment containing and using PCB's are electrical transformers. EPA estimates that about 140,000 such transformers, each containing several hundred gallons of fluid with 40 to 100 percent PCB's. The average transformer is a 2,000 pound, or 1 ton, PCB risk.

EPA has authorized continued use of PCB's in electrical transformers as long as numerous regulatory controls have created a strong incentive for transformer owners to eliminate their PCB problems altogether.

PCB transformer owners have two basic alternatives if they wish to eliminate their PCB risks. One they can replace the PCB transformer with a new, non-PCB unit, or two, they can drain liquid PCB's from the transformer, servicing to remove absorbed PCB's, and refilling with a non-PCB coolant. This is called retrofilling. Retrofill servicing of PCB transformers to reduce PCB concentrations, thus reclassifying to non-PCB status, is specifically authorized by EPA.

Replacing a transformer with a new unit provides the owner with new non-PCB equipment, but does not lead to destruction and elimination of all PCB's. After the old transformer is drained and its surfaces rinsed, the carcass is typically landfilled intact in accordance with EPA regulations. Such carcasses still contain 20 to 100 pounds of PCB's in their internal workings. Surface flushing will not and cannot remove the residual PCB's held within the porous container of the transformer.

Therefore, while PCB transformers are being phased out, substantial quantities of hazardous liquid waste are being put into landfills with consequent potential for migration. Thus, after all the effort and expense to replace, the PCB problem is not eliminated; it has just moved from above ground to below ground where it is much more difficult and expensive to monitor and ultimately correct.

The experience of the past decade suggests that knowhow for dealing with toxic wastes in landfill is in short supply. Regardless of the liners or leachate collection system, no landfill can be considered secure forever. Even new state-of-the-art landfills legislated by Superfund are far from secure forever.

Of the sites looked at carefully, all are leaking or appear to be leaking in the opinion of the EPA hydrogist who conducted the first site inspections.

Senator **Bentsen**. Your time has expired. If you could summarize, please.

Mr. MARTIN. To summarize, the RECLASS-50 process is now being offered throughout the United States by Unison. Achievement of non-PCB classification is accomplished at the transformer site in a timely, cost-effective manner, thereby permitting continued use of the transformers. Most importantly, from the standpoint of hazardous waste disposal, this technique removes nearly all PCB's from the transformers so that they can be destroyed. Unlike transformer carcasses that have been merely drained and rinsed before burial in an underground cell, these retrofilled transformers will contain no more than trace quantities of PCB's and thus will not pose the long-term potential for PCB migration into the environment.

Thank you.

Senator BENTSEN. This is a chemical degradation process? It is proprietary?

Mr. MARTIN. This is a process by which you can extract liquid waste from previously thought to be solid materials and concentrate those wastes into liquid form so they can be suitably permanently destroyed by facilities such as high-temperature destruction or chemical methods.

Senator BENTSEN. I will certainly be addressing some questions to you on it. I want to know more about it.

Mr. MARTIN. Thank you.

Senator BENTSEN. Dr. Brown, if you would proceed, please.

STATEMENT OF WILLIAM BROWN, DIRECTOR, MARINE AFFAIRS, WASTE MANAGEMENT, INC.

Mr. BROWN. Thank you, Senator Bentsen.

My name is Bill Brown. I am director of Marine Affairs of Waste Management, Inc. I am a marine biologist and lawyer. I recently joined Waste Management after 3½ years with the environmental defense fund.

Here with me today is Dr. George Vander Velde. Dr. Vander Velde is a biophysicist. He is employed by Chemical Waste Management as vice president for technical services and development.

Waste Management owns and operates the *Vulcanus I* and the *Vulcanus II,* ships specially designed to incinerate liquid organic hazardous waste at sea. Waste Management plans to operate the *Vulcanus II* in the United States, leaving the *Vulcanus I* to incinerate waste in Europe and other international markets.

Mr. Chairman, ocean incineration is not ocean dumping. The intensely hot temperatures of incineration break down toxic waste and turn it into nontoxic byproducts. Ocean incineration destroys pollution. It is an alternative to the dumping that used to occur routinely in the gulf and in the Atlantic. Ocean incineration is a way to prevent the cancer that toxic chemicals may cause if they are not destroyed.

EPA research on our vessels between 1974 and 1982 has demonstrated their safety. Using state-of-the-art sampling technology in the most recent testing, EPA and the State of Texas, its air pollution control board, were unable to detect any toxic chemicals from PCB waste in the stack of the ship, not to mention in the air or water or in marine life.

Ocean incineration is an operationally proven state-of-the-art technology. Our vessels have operated routinely in Europe since 1972, destroying wastes in about 400 voyages without a single accident. The vessels are double hulled and they have double bottoms. The waste is carried in eight separate tanks. In the United States, strict Coast Guard requirements apply to loading and movement of the vessels, and, in addition, EPA has proposed to require that a shiprider, an employee of EPA, would be on board the vessels whenever it transports or incinerates hazardous waste—on board at all times.

Concerns have been raised about the risk of spills. Yet EPA estimates that the risk of any accident at sea is no more than once each 1,200 years. In fact, they have estimated that the risk of a catastrophic spill—and they base this on statistics from the bulk chemical trade—is estimated at once each 24,000 years of operation.

It is also important to keep in mind, to put fear of spills in proper perspective, that there is this enormous bulk chemical trade going on. Using EPA statistics, in just 2 hours, more pure hazardous chemicals move through gulf coast ports than would move through these same ports in a year's routine operation of an ocean incineration vessel. That number I gave you doesn't include the petroleum trade. It is based solely on hazardous chemicals.

That trade is virtually all the risk that is posed from chemical spills in the gulf. These ships are safe. But if there is any consideration of liability or waiver of rights under various statutes, the proper policy consideration of Congress should be on concerns of releases of these things from any ship that carries hazardous substances.

Mr. Chairman, our Nation needs ocean-based incineration to meet the enormous, accelerating need for alternatives to landfilling that will permanently eliminate toxic waste and better protect human health and the environment.

The Congress and the EPA have concluded that incineration is one of the environmentally superior alternatives to land disposal of liquid organic hazardous waste. The EPA and the Science Advisory Board of EPA have concluded that incineration, at sea or on land, is a valuable technology and should move forward now. Ocean-based incineration is considered by EPA to be even safer for human health than incineration on land. In fact, incineration on land is occurring right now, including in the Houston metropolitan area.

EPA estimates that demand for commercial incineration of liquid organic hazardous waste will increase to seven and a half times more than current capacity over the next 5 years. This estimate is based principally on the recent amendments to the Resource Conservation and Recovery Act.

I would like to point out that although the New Jersey Hazardous Waste Study is, I think, an excellent document, very thoughtful—I reviewed it last night—as far as I can tell, it did not include projections based on the recent RCRA amendments. Its projections were based on some regulatory changes by EPA, but not the RCRA amendments. In fact, most of EPA's estimate for increase over the next 5 years comes from the RCRA amendments and not from other sources.

EPA has evaluated potential alternative technologies that are now in research stages and has concluded that they will have minimal impact on the market for incineration of liquid hazardous waste and probably will be unavailable for many years. Waste Management is at the forefront of a number of companies investing in those technologies. We think they are important, but we do not expect them to supplant ocean incineration of liquid organic chemical waste, particularly chlorinated wastes.

In sum, Mr. Chairman, enormous amounts of PCB's and other hazardous wastes are now contaminating our air, water and land. That includes the surface microlayer of all of these systems. Just three incineration ships that could be brought into the United States right away would double the existing commercial capacity for incineration of liquid organic hazardous waste. That would dramatically increase the rate at which these chemicals can be removed from our environment forever.

Failure to use existing ocean-based incineration capacity now can only work to augment the huge and rapidly growing reservoir of toxic chemicals on land. These chemicals will most probably leak and most probably be dumped. They will contaminate our ground water, the rivers and the sea. Human health would be threatened and so would the environment.

The greatest risk facing us now is the harm to human health and the environment that is likely if we delay in using this technology. This is the risk that is the foundation of need. We should not bring that kind of harm upon ourselves.

Thank you.

Senator **Bentsen**. Mr. Brown, that is very interesting testimony. Thank you.

Mr. Jerry D. Neel, you may proceed.

STATEMENT OF JERRY D. NEEL, SENIOR VICE PRESIDENT, OPERATIONS, ROLLINS ENVIRONMENTAL SERVICES, INC.

Mr. **Neel**. Thank you, Senator Bentsen. My name is Jerry Neel. I am senior vice president for operations of Rollins Environmental Services, Inc. I have been employed by Rollins for 11 years and all of the time has been spent at our incineration facility at Deer Park, TX, which was the first commercial facility to be permitted by EPA to incinerate PCB's.

Last year I was appointed by Governor White to serve on the Governor's task force for toxic and hazardous wastes. I have extensive experience in the hazardous waste disposal business.

Mr. Chairman, I have prepared and submitted a written statement for your consideration and I do not intend to read that entire statement because of the time.

Senator **Bentsen**. It will be inserted in its entirety in the record.

Mr. **Neel**. Rollins has been involved in the incineration business for more than 16 years. A very critical part of that business is analyzing the hazardous waste market. We routinely gather marketing data from companies throughout the country.

Since the beginning of this year, we have surveyed over 3,000 companies regarding their current and projected needs and practices regarding disposal of hazardous wastes.

We believe that under the Marine Protection Research Sanctuaries Act, and the London Dumping Convention that EPA must determine the availability of land-based alternatives before it issues any permits for ocean incineration.

Based on our market research, we believe that EPA has clearly not demonstrated that a need for ocean incineration exists today or will exist over the next 10 years, which is the proposed life of an ocean incineration permit that would be issued by the Agency.

There is one basic reason for this. In anticipation of passage of the 1984 RCRA amendments, many waste generators realized that alternative methods of disposal of hazardous liquid waste had to be developed and utilized. In short, Congress accomplished more than I think they thought was possible. And I think you should be commended for that.

As the cost of alternative methods of disposal went up, companies began to invest in reduction technologies and recovery systems with a result that the market for off-site disposal of liquid waste is not nearly as great as EPA and many other industry representatives had predicted.

We have found that the market for off-site disposal of liquid waste has more or less stabilized. However, we find that the market for sludges and solid waste has been dramatically increasing. Only special incineration land-based equipment can be used to burn these wastes and that is where our business attention has been and will be focused for the future.

It is ironic that our efforts to dispose of these solid wastes may be frustrated by the scarcity of available liquid wastes which we have traditionally used as fuel in our land-based facilities. Without good liquid waste to supplement in the incineration of the majority of the waste, that is the solids and the sludge waste, fuel must be either purchased or removed from other fuel programs to maintain the high temperatures required for proper combustion. Since Rollins operates three land-based incinerators, we have operating proof that hazardous liquids are scarce. As an example, last month at our New Jersey facility we were required once again to purchase fuel to be able to continue operations of our incinerator, to be able to incinerate the sludges and the solids in our rotary kiln.

Purchasing fuel when adequate waste fuels should be available is a waste of our natural resources and should not be condoned.

We pride ourselves in the fact that in the operation of our incinerators at Rollins we have always strived to burn the waste fuels with other waste, therefore minimizing the amount of fuel that would be purchased or removed from fuel programs.

In summary, Senator, we are convinced that the market does not justify the need for additional liquid based incineration capacity. In view of the risk often associated with ocean incineration, such as air emissions, due to the lack of scrubbing and destruction efficiency, we believe EPA carries a heavy burden of demonstrating such capacity is in fact needed before permits are issued.

I thank you for the opportunity to present my testimony.

Senator **Bentsen**. Thank you very much, Mr. Neel. I appreciate your testimony. It will be helpful to us.

Mr. Vincent G. Grey, president of SeaBurn. Would you testify, sir?

STATEMENT OF VINCENT G. GREY, PRESIDENT, SEABURN, INC.

Mr. **Grey**. Thank you, Senator.

Our approach to ocean incineration is somewhat different from the vessel designs that have been discussed here by Waste Management, Inc. and At-Sea-Incineration, Inc. and commonly referred to by the environmentalist groups when they were presenting their testimony.

I think one of the principal things that I would like to accomplish today in giving testimony is to make everyone aware that there is this second type of vessel. The SeaBurn vessel has as its basic common denominator the use of intermodal tank containers.

In our paper there will be a full, complete description of our approach. But in order to understand the concerns that I will be presenting, some of that method of operation needs to be known.

These tank containers, that is, intermodal tank containers—meaning that they can go by road, highway, barge or ship—are dropped off at a generator's plant where they are filled. When they are brought to the marine terminal in the port of debarkation, they are not pumped out; they are not blended; they are kept in that same tank container. They are retained on a chassis, meaning that there is mobility all the time, and that if there is any risk of fire or flood or similar danger arising in the terminal, these containers could be moved easily to a safer location.

The containers are lifted on board a vessel; up to 144 can be accommodated on the vessel. There are several other unique aspects of the system. The ship has horizontal incinerators. Some of the criticisms of ocean incineration that have been leveled previously, involve the projection of the emissions up through vertical incinerator stacks. Our incinerators, being horizontal, direct their exhaust gases across the stern of the vessel, and downward toward the sea.

Additionally, because of the horizontal nature, we can provide sea water scrubbers which remove the heat from the exhaust gases, so that we don't have a plume that goes up into high elevations and gets carried by uncontrolled winds.

The tank containers are built and certified to the U.S. Coast Guard requirements and the International Convention for Safe Containers. All the containers and the piping on the vessel are located above the main deck. That is, there is no cargo tank below deck. Hence, if the ship should go aground or be sunk, there would be no voluminous release of the hazardous waste material into the sea.

You recall there was a vessel that sank in the North Sea last year where some radioactive canisters were removed safely and all of them were accounted for. We maintain that in this tank container approach that we have in our vessel design, these containers too are in a safe position above deck and can be retrieved in the event of a collision or sinking.

Now I would like to respond to some of the specific issues that were raised in the letter of invitation.

The site access is a subject of special concern to us. The EPA Office of Waste has expressed a policy of allowing only "one ship per burn site." Such a policy would severely and unnecessarily restrict the economic viability of ocean incineration because it would require very expensive vessels to sit idly waiting for the burn site to be vacated by some other vessel, thereby driving up the costs of incinerating wastes.

If one incinerator vessel (1) had an extremely low burn rate or (2) if it had constant equipment breakdown, causing the incinerator burns continually to shut down, or (3) if the vessel had a huge waste storage capacity, another ship would have to stand by and wait for an indeterminate time for that first ship to finish up. Therefore, the first ship could monopolize the burn site. We think that that problem should be addressed.

The one ship per burn site policy would also fail to recognize that the use of the site should be influenced by (a) what incinerator technology is being employed on a particular vessel, (b) what is the capacity of the given burn site to buffer the effluents from the incineration—this, of course, involves the ocean currents and the depth of water, and (c) the safety of the vessels as indicated by the IMO classification. Ours is a type I vessel; all others are type II.

Multiple burn sites is a second issue we would hope you would address. Various State officials and public interest associations have complained that they objected to the use of their State as a primary artery for the flow of the Nation's toxic wastes in order to be delivered to the incinerator ships.

Senator **Bentsen**. Mr. Grey, if you would summarize.

Mr. **Grey**. Yes.

Multiple burn sites on each coast should be designated in order to distribute the amount of waste progressing to the coasts from inland sources and yet minimize the overland distances that the waste must travel.

Senator **Bentsen**. Mr. Grey, I must ask you to finish.

Mr. **Grey**. I was just going to say, Mr. Chairman, there are other subjects that we have dealt with in our written statement and I am sure that you will consider those as well.

We would be pleased to have them.

Senator **Bentsen**. Some very tough issues have been raised and some provocative questions. That is one of the reasons we are holding a second hearing in anticipation of that. That is scheduled for July 17. That one will discuss the issues raised here today with several Federal agencies, including the EPA, the Coast Guard, and the Maritime Administration.

Today's record is going to be open to receive additional testimony in order to facilitate the preparation for that particular meeting. I would urge anyone that wishes to submit additional testimony, things you wish you had said, to provide that to the committee prior to June 26.

Thank you very much. I think it has been a most productive hearing this morning. Thank you.

[Whereupon, at 12:10 p.m., the subcommittee was recessed, to reconvene subject to the call of the chair.]

[Statements submitted for the record and responses to additional questions follow:]

TESTIMONY OF
MARK WHITE
GOVERNOR OF TEXAS
TO THE UNITED STATES SENATE
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
IN REGARD TO OCEAN INCINERATION

WASHINGTON, D.C. JUNE 19, 1985

Senator Chafee, Senator Bentsen, Members of the Subcommittee, I appreciate the opportunity to testify before you today on a matter of grave consequence to the people of Texas and the environment. I also respectfully ask that the unanimously adopted resolutions of the National Governors' Association and the Coastal States Organization concerning ocean incineration of hazardous waste be entered in the record. Those two organizations share the concerns that I and many others have raised regarding the safety, liability, and unproven need for ocean incineration, as well as the importance of its proper regulation.

In opening, let me emphasize that this is an issue of growing concern not only to Texas. Neighboring coastal states along the Gulf of Mexico, as well as east- and west-coast states that may be affected by Atlantic and Pacific burn sites, are also concerned.

I must also point out that our objections are not without a true understanding of the nature of risk in general and of this risk in particular. In the larger context of this debate I feel it is important to consider the mindset with which we in Texas approach this issue. It is important to understanding the basis for our objections. And my point is simply this: In Texas we understand, we know the meaning of, and we are willing to accept -- we are even comfortable with -- reasonable levels of risk-taking in the interests of forging greater social, industrial, technological or economic progress. We have done it in the past, throughout our history, and we do it all the time.

There is clear evidence that we accept risk, considering the fact that Texas has supported and encouraged, all along, the development of its offshore oil and gas drilling industry. A certain level of risk surrounds the operation of every single offshore drilling platform in the Gulf of Mexico today. But the tremendous benefits from that development, for Texas and for this nation as a whole, are substantial and outweigh the reasonable risks involved. Moreover, offshore drilling has been developed safely, with minimal danger, through good planning, good leadership, and thankfully, through good fortune. It has developed, without undue danger to human safety and the environment, through cautious and wise decisions on the part of industry and government. And that is all that we would ask from the federal government on the issues we are discussing today.

First, I would like to discuss a general concern about the lack of any logical sequence in the way the Environmental Protection Agency (EPA) has proceeded to handle questions about the viability of ocean incineration as a safe and efficient disposal method.

A research strategy document from the EPA, made final in February of this year, outlines their perception of the research effort necessary to establish conclusive results on the efficiency and safety of ocean incineration. At that time, the EPA Science Advisory Board was still completing its assessment of the overall adequacy of available scientific data on the matter. When their report was released in April, 1985, it indicated the need for substantial additional research on fundamental aspects regarding the impact and effect of ocean incineration.

The EPA Office of Policy, Planning and Evaluation also recognized that existing information was inconclusive. Nevertheless, they issued a report in April that drew the following conclusions: a) that ocean incineration is an "environmentally sound" waste disposal option for liquid hazardous wastes; b) that there is a need for ocean incineration, and; c) that there is "no clear preference" between ocean incineration or land incineration in terms of risks to human health and the environment. Those findings, although currently unsubstantiated, are necessary in order for the EPA to assert compliance with existing international agreements. [The London Dumping Convention.]

Before either of the two April studies were released the EPA had proposed a set of ocean incineration regulations, that, if finalized, would allow the EPA to begin processing incineration permits in the very near future without the benefit of essential research. The EPA apparently assumes that a research strategy alone is sufficient to begin issuing permits, since no plans have been announced indicating how or even when any of the needed research would be undertaken. I submit to you that the technical basis for the regulations is inherently suspect without the benefit of proper and necessary scientific investigations. It is our position that such hasty and premature actions by the EPA are illogical and should not be permitted to go forward unchecked.

Why has the process not followed a logical sequence of events? Is it because of external pressures on the EPA to begin issuing permits to impatient but aggressive and persuasive potential applicants? Is it because the Maritime Administration took a high-risk financial gamble by providing $55 million in loan guarantees for the construction and testing of two incineration ships? What other reasons could there be for the EPA to so abuse logic and reason in this process that is leading the nation toward what should be an informed and rational decision regarding ocean incineration?

Let me simply note here that we in Texas are not unfamiliar with one of the more aggressive potential applicants, Chemical Waste Management, Inc. This is the firm that was the applicant for the proposed EPA ocean incineration permits that were ultimately denied in May, 1984, after some 6,000 other Texans and I strongly objected. We were joined in that case by representatives from other states, who expressed many of the same kinds of objections that we are making here today.

Just last month, Chemical Waste Management was the subject of a tentative settlement in a lawsuit brought by the State of Texas regarding one of their hazardous waste landfill operations. The settlement represents the largest civil penalty ever assessed in an environmental case in Texas. In addition to a $1 million penalty, the company would be required to spend substantial sums in order to assure groundwater protection from contamination at the waste site. The settlement remains tentative, pending the completion of a public review before filing it with the court.

I raise this issue because we, in Texas, are recommending to the EPA that the past performance of the applicant in meeting standards and requirements should be taken into account in the permitting process. Last week, I signed into law a comprehensive new hazardous waste management act for Texas that requires this kind of review at the state level. We feel that not only will this make known poor performers more accountable, but will enhance the reputation of responsible operators.

Precedent Set by Resource Conservation and Recovery Act Amendments of 1984

The proponents of ocean incineration frequently cite as justification, if not endorsement, of ocean disposal technology the RCRA amendments approved last year by your Committee. I believe that does a disservice to the achievements you made in those landmark amendments to the RCRA.

As I read it, what you did in RCRA was to lodge the burden of proof with the EPA in determining the safety and appropriateness of hazardous waste disposal methods. For the first time ever, the EPA must, within a time certain, demonstrate the safety of hazardous waste disposal in landfills, surface impoundments and injection wells. Otherwise it is automatically banned. I applaud that decision to relieve individual citizens, landowners, and state and local governments from the burden of having to prove that a disposal method is not safe, and to guarantee that it will not be permitted unless EPA proves that it is. And that is exactly the perspective I would ask you to consider today in my deeply felt reservations about the EPA's approach to ocean incineration.

Have they proven that an accident at sea involving an ocean incineration vessel can be cleaned up? Can they prove that the effects would not be irreversible? Has the EPA proven that there would be sufficient liability protection to cover the full impact of an accident at sea? Has the EPA proven that the bioaccumulation from even normal operation of incineration vessels is acceptable? And, is it certain that the Gulf of Mexico is the most appropriate place to pursue this program?

These are the some of the questions that must be answered to our satisfaction and to the public's before this technology should be allowed to go forward. The burden of proof is clearly on the EPA to assure protection of human health and the environment in advance of any permits. I reject the rationale that the impending disposal bans in the RCRA are a valid argument to justify a headlong rush into ocean incineration. They should be cited in the spirit of their intent, as a new standard requiring that safety must be demonstrated up front in every case.

In Texas, we view waste re-use and reclamation, as well as ultimate destruction, at the top of the hierarchy of preferred management and disposal methods. Our own new waste management act contains language to that effect. Through RCRA delegation, however, we also fully subscribe to the principle that the safety of disposal and management technologies and methods should be well-determined prior to their use.

EPA Proposed Regulations

The remainder of my testimony will concentrate on the proposed

EPA regulations for ocean incineration, as they embody the philosophy and policies espoused by the EPA throughout this regulatory process. I believe there are several critical issues that have not been adequately addressed by the EPA in its proposed regulations. These include:

1. A lack of sufficient liability assurances;
2. Failure to demonstrate a need for ocean burning, as required by law;
3. An absence of prudent and essential research;
4. Inadequate technical verification standards, and;
5. Flaws and inconsistencies in the permitting process.

Liability

With respect to liability, the proposed regulations only require that the applicant demonstrate evidence of insurance coverage within a range of $50 to $500 million dollars, yet to be determined. These regulations do not deal specifically with the liability issue beyond simple operator insurance. No amount of insurance will benefit potential victims of a disaster if limits of liability are invoked under the Limitation of Shipowner's Liability Act.

In light of the phenomenal damage which could result from any mishap or disaster at sea, assuring full liability coverage must be a federal duty. Because the damages could be catastrophic, the indemnity must also be effective without regard to limits. If any question remains about limits on liability, then the EPA should require applicants to waive any limits as a condition of the permit.

In addition, the proposed regulations give the Assistant Administrator of the EPA discretion to propose a level of insurance consistent with the level of risk posed by the applicant's operation. Such discretion, without clear standards, I believe, is terribly ill-advised. If the EPA deems such discretion absolutely necessary, a strict minimum level of liability should be proposed, and guidance must be provided for establishing the "level of risk" determination.

Demonstrated Need

Next, I would call into question the issue of need. The EPA has yet to demonstrate the need for ocean incineration as required under the Marine Protection, Research and Sanctuaries Act -- despite their unsupported assertion to the contrary.

The London Dumping Convention indicates that if land-based alternatives are shown to be "more practical," a license for ocean incineration should not be granted. The EPA, however, interprets need to be presumptively demonstrated if they, themselves, determine that ocean incineration poses less or no increased risk than feasible land-based alternative. I believe that the EPA's interpretation conflicts with the London Dumping Convention's intent for demonstrating need.

In addition, the EPA's Office of Policy, Planning and Evaluation asserts that ocean incineration poses no greater risk than land-based incineration. This contradicts the Agency's acknowledgement that further research is needed on the effects of ocean burning before final conclusions can be drawn regarding the level of risk involved. Without the necessary research and findings, any conclusion that ocean incineration poses no greater risk is obviously premature and without sufficient basis.

In light of these gross inconsistencies, no further action should be taken toward permitting hazardous waste burns at sea until an adequate and substantiated needs assessment becomes final through established administrative process.

Research

With regard to research, the EPA has responded to many of our original concerns by developing a research strategy, yet that strategy is essentially meaningless in terms of timing. Let me point to just a few of the flaws:

- As I emphasized earlier, once the proposed regulations become final, the EPA would begin considering applications for operating permits -- regardless of necessary research yet to be conducted.

- It is our position that baseline studies must be finished before any burns take place, if they are to be at all credible as baseline studies.

- Research on the biology and chemistry of the ocean's surface microlayer is necessary in order to ascertain effects -- which in turn are necessary to make the need determination I mentioned earlier.

- Similarly, research results as to the effects upon human health and the environment must be available to make the need determination.

- Long-term environmental monitoring is not -- but must be -- included as part of the research strategy.

- Research on contingency planning must go beyond minimizing catastrophic incidents; it should provide for specific effective methods of accident avoidance and mitigation.

- Any research conducted on incineration at sea must include the full range of wastes and available incineration technologies in order to determine their effects.

Technical Verification

Another general area of concern is that of technical verification. How should we determine the viability of ocean incineration as a safe and efficient disposal method? We find numerous uncertainties and inconsistencies in this area. In the interest of time, I will cite only a few examples:

- Several provisions of the Toxic Substances Control Act are more stringent than the proposed regulations, including those dealing with incinerator temperature, residence time, use of scrubber for both acids _and_ heavy metals, individual testing of incinerators, and monitoring and recording requirements.

- The "best available control technology" standard is required for land incineration. A parallel standard should be applied at sea, and the regulations must recognize that there are various incinerator and shipboard options available for burning waste at sea.

- There are no performance standards for products of incomplete combustion. Yet such a standard is needed in order to measure operational efficiency, and to determine effects of these products upon the system.

- o There are no standards for burn conditions that take into account seasonal, biological, ocean current, and weather variations.

Procedures

The last major area of concern involves the procedures outlined in the proposed regulations. Here, there are several unacceptable flaws.

First, under the proposed regulations, the Gulf of Mexico incineration site is redesignated for up to 10 years, while no other sites have been designated. This very set of regulations sets out specific criteria and procedures for designating ocean incineration sites, many of which have never been applied to the Gulf site.

By this procedural maneuver, the EPA is in effect "grandfathering" the Gulf site as previously designated without sufficient information, despite the fact that the information would be required by the agency's own rule.

We have pointed out to the EPA on past occasions that the Gulf of Mexico contains several economically important species of fish as well as species important to the marine food chain. These include billfish, broadbill swordfish, the protected bluefin tuna, pompano and flying fish. In addition, the western Gulf area is considered to be important in the spawning cycle of the giant bluefin tuna. The area is also thought to be a haven for young broadbill swordfish that are below optimum U.S. market size yet ultimately become available to the U.S. fishing fleet. It is inconceivable to me that the EPA could ignore the existence of these valuable and precious resources, though I am afraid that is all too true.

Designation of the Gulf of Mexico site should be withdrawn until existing requirements have been met. And surely no procedural slight of hand should be allowed to grandfather the site in the proposed EPA regulations when equivalent substantive and procedural requirements have not been met.

There are other procedural shortcomings to which we object, including the following:

- The EPA has rescinded the applicability of the Agency's "voluntary" Environmental Impact Statement (EIS) policy of 1974 with respect to this proposed rule. They claim that the 1979 EIS prepared on the amendments to Annexes I and II of the London Dumping Convention is sufficient for the purpose of these regulations. Review of that EIS reveals the following commitment by the EPA and the State Department: "EPA will prepare environmental impact statements before promulgating interim or final national regulations and designating each new burn site."

While the voluntary EIS policy may be rescinded, the provisions of the 1979 EIS cannot be changed on the EPA's motion by a simple assertion in a rule. An EIS must be prepared for the rules under discussion here. Or the EPA must observe required legal process to supplement (according to Council on Environmental Quality regulations) the 1979 EIS because "there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." The EPA's move to ignore this commitment in its 1979 EIS represents yet another example of the Agency's maneuvers to foil reasonable process in its rush to ratify ocean incineration of hazardous and toxic wastes.

- Discretion afforded the EPA in the proposed regulations creates obvious loopholes, and thus raises further doubts about their actions.

- Granting a 10-year permit assumes that ocean dynamics, species patterns, environmental impact, and acceptable technology, among other factors, will remain static. I would propose that the permits be issued for periods no longer than three years, with annual performance reviews.

- In considering permit applications, the EPA has an obligation to the public to examine compliance histories of the applicant, as I noted earlier.

- Finally, a processing fee of $1,000 is grossly insufficient to cover the costs of permit proceedings, administration, research, agency shiprider, and other costs borne by the EPA, and ultimately by taxpayers.

Conclusion

In summary, I believe that the EPA cannot in good faith approve these regulations until it responds to public concerns, inconsistencies, and inadequacies raised throughout the course of this process. It is a fallacy to think that because we incinerate wastes at sea, away from the human population, humans will not be affected. We are dependent upon the sea for much of our food and livelihood. The potential ingestion of bioaccumulating wastes and their by-products by marine life, whether through poorly regulated emissions or by accident, will eventually affect human life.

We have yet to be convinced that we, or the EPA, through appropriate studies and evaluations, know the risks of ocean incineration well enough to determine what constitutes proper regulation.

However we do know, with great certainty, that even the most sophisticated and seaworthy vessels of the U.S. Navy and merchant marine are involved from time to time in accidents and collisions on the open sea. Not very long ago, just about the time of the last hearing on this subject in Brownsville, we were reminded of this by the collision of a Navy ship with another vessel operating in open water off the coast of Cuba. So it happens, and despite the assurances of safety, those confident assertions sound altogether too much like some echo from the past claims once made by the builders of the mighty Titanic.

Regulation, obviously, should develop through informed decision-making. In this case, we have insisted continually on a process of information-gathering in advance of any permit proposals. We will continue to insist that a rational sequence be followed, and that the public interest be fully recognized and served.

In keeping with this position, I would like to express my strong support for Senator Cranston's S. 1039, the companion measure to H.R. 1295 by Representative Boxer, whose original co-sponsors include three members of the Texas delegation. I am especially appreciative of the fact that the bill calls for a moratorium on the issuance of permits by the EPA for ocean incineration until appropriate scientific research has been carried out by the Agency and an informed evaluation of this waste disposal method can be made in the context of a deliberate waste management strategy. I will continue to encourage members of the Texas delegation to support the measure, as it is fully consistent with the positions expressed in my testimony this morning.

Clearly, we are at another threshold in the nation's approach to management of hazardous and toxic waste. At present, the entire nation is bearing the burden of funding the cleanup of leaking hazardous waste sites, many of which were thought to be safe at the time of the construction and use.

Through the heavy price of the federal Superfund we may -- and I emphasize may -- be able to satisfactorily render these sites safe to surrounding human habitation and the environment. But now comes the EPA, attempting to lead the nation to yet another means of hazardous waste disposal this time with acknowledged ignorance of the impact and a sure knowledge that cleanup of a contaminated ocean site is impossible.

Certainly, in the past, the pollution of our land, rivers and groundwater was not intentional. Ignorance was to blame. But we have learned better, and we had better heed the lessons. In this day and age, no admission of ignorance should be a valid excuse. Not when it is so foreseeable that we might imperil human health on such a huge magnitude as this. Not when the implication is clear that we might place our oceans at grave risk. And surely not when we have the minds and the tools at our disposal to make a proper and comprehensive and scientifically valid assessment of the risks, the benefits, and any need there might be for ocean incineration as a method of waste disposal.

Thank you for this opportunity and thank you for your time.

ROBERT T. STAFFORD, VERMONT, CHAIRMAN

JOHN H. CHAFEE, RHODE ISLAND
ALAN K. SIMPSON, WYOMING
JAMES ABDNOR, SOUTH DAKOTA
STEVE SYMMS, IDAHO
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BAILEY GUARD, STAFF DIRECTOR
LEE O. FULLER, MINORITY STAFF DIRECTOR

United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510

June 24, 1985

The Honorable Mark White
Governor
Congressional Building
Post Office Box 12428
Austin, Texas 78711

Dear Governor White:

Thank you for your thoughtful and eloquent testimony before the Subcommittee on Environmental Pollution regarding ocean incineration. I would like to follow up on your testimony with the questions listed below. Your response will be included in the permanent hearing record.

1. Texas has not yet adopted a Coastal Zone Management Plan. Has it considered adopting one, and would it help the State control the siting, and operation of ocean incineration base ports? Could the State use a Coastal Zone Management Plan to keep incineration vessels out of the State's territorial waters?

2. Please describe the main provisions of the new Texas hazardous waste management act and how it will be administered.

What are the objectives of the permit applicant review provisions and how will they be applied?

3. What actions has Texas taken toward comprehensive hazardous waste management, including:

--maintaining data showing how much hazardous waste is generated, stored, and disposed of in the State?

--maintaining data showing the quantity brought into the State for treatment, storage, and disposal?

--developing criteria for systematic siting of waste disposal facilities?

--establishing an authority responsible for overseeing hazardous waste issues?

5. What is the State's position regarding housing more land-based incinerators for hazardous wastes as Texas industry grows?

6.. How much hazardous waste is generated in the State annually and how is it treated, stored, or disposed of and in what quantities? What quantity of hazardous waste is brought into the State annually for treatment, and disposal?

It would be greatly appreciated if you would respond to these questions by July 12, 1985. This will enable our consideration of relevant issues before the second hearing on this subject.

Sincerely,

Lloyd Bentsen

Lloyd Bentsen

OFFICE OF THE GOVERNOR
STATE CAPITOL
AUSTIN, TEXAS 78711

MARK WHITE
GOVERNOR

July 11, 1985

Lloyd

Dear Senator Bentsen:

I would like to thank you for your taking time out of your busy schedule to both arrange and chair the June 19 hearing of the Subcommittee on Environmental Pollution in Washington, D.C. Your interest and hard work in this vital issue is greatly appreciated.

As you requested, I am sending specific answers to your questions regarding my ocean incineration testimony at the June 19 hearing. If you should have any additional questions, please feel free to contact me. Your dedication to the safety of human health and to protection of the environment is to be commended.

Yours truly,

Mark

Mark White
Governor of Texas

The Honorable Lloyd Bentsen
United States Senator
Committee on Environment and Public Works
Washington, D.C. 20510

MW:ss

Attachment

Follow-up Information on June 19 Testimony

1. Texas has not seriously considered adopting a Coastal Zone Management (CZM) Plan since the decision in 1981 to not submit such a plan. At this time it does not appear that a CZM plan would provide adequate benefit to Texas in federal funding to justify its adoption. Nor would a CZM plan serve as an assurance of ultimate State control over ocean incineration base ports and incineration in the State's territorial waters. The Secretary of Commerce has the authority to override a state's nonconcurrence with applicant certification that the proposed activity complies with that state's CZM plan. However, the State of Texas is following with interest the efforts by the State of Alabama to invoke the "consistency clause" under its approved CZM plan to acquire stronger EPA permit provisions for hazardous waste storage and transfer facilities proposed by ocean incinerator applicants at its ports. Certainly, the applicability of the consistency clause is in question subsequent to the U.S. Supreme Court's decision in California v. Interior, particularly as the CMZA undergoes reauthorization.

2. The main provisions of the comprehensive hazardous waste management legislation are as follows:

   - establish a hierarchy of preferred hazardous waste management technologies;
   - establish an interagency coordination council among appropriate regulatory agencies, to maintain consistency in agency rules; consider incentives to encourage reduction and recycling; and evaluate feasibility of waste exchanges, clearinghouse, and household hazardous waste collection;
   - require a biennial report from Texas Water Commission, evaluating adequacy of fees and outlining projections of waste volumes and disposal capacity;
   - prohibit permit issuance of hazardous waste landfill or land treatment facility in certain high-risk areas;
   - establish a lead agency to conduct a sole permit hearing;
   - establish a local review committee process to identify and resolve issues before a hearing;
   - enhance inspection activities of hazardous waste management facilities;

- establish a registry of hazardous waste facilities which may constitute an imminent and substantial endangerment to include;
  - priority ranking of need for remedial action,
  - an actual plan for remedial action,
  - a process by which to expedite cleanup;
- allow for apportionment of costs and right of contribution by voluntary parties who clean up a release which presents an imminent and substantial endangerment;
- allow for State recovery of any cleanup costs incurred; and
- strengthen provisions for injection wells.

The Texas Water Commission will administer these provisions through rulemaking. The law takes effect September 1, 1985.

There are several provisions in the legislation regarding permit applicant review:

- Texas Water Commission will serve as the lead agency in hazardous waste permitting proceedings under its jurisdiction. Other agencies may submit proposed findings as parties to the hearing.
- Compliance summaries of an applicant's hazardous waste management activities shall be developed by the appropriate state agencies. Such evidence, if entered into the record, shall be considered in the permit decision.
- A local review committee process shall be made available whereby applicants may enter into agreements with affected parties to identify and resolve concerns prior to the hearing.

3. The Texas Water Commission has begun the process of data maintenance on amounts of waste generated, stored, treated, disposed, imported, and exported in Texas. That agency has also developed systematic siting criteria and has served as the primary oversight entity with regard to hazardous waste issues.

However, pursuant to the comprehensive hazardous waste legislation, data maintenance and reporting will be enhanced. The biennial projection reports will assure this increased capability. The provisions of this legislation include detailed characteristics which make sites unsuitable as hazardous waste management facilities. Additionally, the Texas Water Commission's authority as an oversight entity is strengthened in the amendments, and the establishment of the interagency coordination council will require coordination in such oversight.

4. If proposed land-based incinerators are shown to be both effective and safe, so as to assure protection of human health and the environment, I believe that the Texas Water Commission will be considering the merits of permitting such facilities through the designated administration process.

5. According to Texas Water Commission figures, the latest of which were compiled in 1983, the following quantities were generated, treated, stored, disposed, imported, or exported:

A.

Waste Treated:	61%	38.4 million tons
Waste Stored:	21%	13.2 million tons
Waste Disposed:	18%	11.3 million tons
Deep well injection:	78%	8.7 million tons
Surface impoundments:	8%	.9 million tons
Other:	8%	.9 million tons
Landfill:	5%	.6 million tons
Total Produced - 1983		62.9 million tons

B.	Regulated Hazardous Waste Generators in Texas	2400 Generators
C.	Regulated Hazardous TSD Facilities in Texas	1100 Facilities
D.	Hazardous Waste Imported to Texas - 1983	8197 tons
E.	Hazardous Waste Exported from Texas - 1983	45745 tons

National Governors' Association

John Carlin
Governor of Kansas
Chairman

Raymond C. Scheppach
Executive Director

June 18, 1985

The Honorable John H. Chafee
Chairman
Subcommittee on Environmental Pollution
Committee on Environment and Public Works
567 Senate Dirksen Office Building
Washington, D.C. 20510

Dear Chairman Chafee:

The National Governors' Association has recognized the need for environmentally sound and effective means of disposing of hazardous and toxic wastes, and recognizes that ocean incineration may eventually be demonstrated to be both safe and effective. However, the Governors have strongly endorsed a position calling for the development of comprehensive standards and criteria, baseline data, liability provisions, and environmental assessments and impact statements before EPA advances ocean incineration permits or permit proposals. In addition, the Governors recommend that at-sea incineration permits must be in compliance with the consistency provisions of the Federal Coastal Zone Management Act, as amended. I would note, however, that the Governors' position is not intended to limit or prohibit research permits.

I will very much appreciate your inclusion of the attached NGA policy position in the record of your hearings on ocean incineration, and look forward to working with you as bills advance, to ensure that the Governors' concerns on this important issue are considered.

Sincerely,

Anthony S. Earl

Governor Anthony S. Earl
Chairman
Committee on Energy and Environment

Enclosure

National Governors' Association

John Carlin
Governor of Kansas
Chairman

Raymond C. Scheppach
Executive Director

D. - 19

HAZARDOUS WASTE MANAGEMENT

Ocean Incineration of Toxic Waste

The National Governors' Association realizes the need for effective means of disposal of hazardous and toxic wastes; it also realizes the need to protect the population and the environment from possible adverse effects of such waste disposal.

Given the ongoing concerns of states about ocean waste incineration and the prospect of the U.S. Environmental Protection Agency 1) establishing precedents regarding permitting of at-sea toxic waste incineration at the earlier designated Gulf of Mexico burn site and 2) taking some action in the near future regarding designation of disposal zones off the Atlantic and Pacific coasts, the National Governors' Association strongly endorses the following:

- Before any EPA permits or permit proposals for ocean incineration are advanced, comprehensive standards and criteria must be developed, made available for thorough public review, and promulgated as agency rules. EPA's proposal to permit ocean incineration of toxic and hazardous wastes under the exception clause in the Marine Protection and Sanctuaries Act (Ocean Dumping Act) is inappropriate, lacks acceptable technical substantiation, and is unacceptable to states.

- Liability and limitations on liability of owners/operators of incinerator ships must be adequately spelled out to include specific events under which compensation would be granted, means for the public and damaged parties to file claims for damages, extent of compensation, and mandatory insurance provisions. It is imperative that the EPA require owners/operators to assume liability as a condition of a permit being granted, regardless of limitations on liability which might exist under other statutes or common law, including those related to international waters. The option to use such limitations should categorically be denied.

- Additional studies of the entire ocean incineration process must be conducted to create baseline data and to provide conclusive evidence of risks concerning environmental health and human safety.

- Contingency plans for accidental or catastrophic events must be developed that will be comprehensive and realistic, that reflect guarantees of safe and timely action, and that outline clearly the roles of the permittee: federal, state, and local governments; and private authorities in any such contingency.

- Environmental assessments and impact statements must be prepared for proposed at-sea incineration permits in strict accordance with the National Environmental Policy Act.

- Thorough assessment should be made of the onshore support facilities necessary for the safe and efficient receipt, interim storage and ultimate transfer of the toxic and hazardous material to the incineration vessel.

- Proposed at-sea incineration permits must be in compliance with consistency provisions under Section 307 of the Federal Coastal Zone Management Act, as amended.

- It is not the intention of the resolution to limit or prohibit research (or test) permits for ocean incineration issued pursuant to proper public notification and review.

Coastal States Organization

An alliance of the Coastal States, Commonwealths, and Territories providing an effective voice in the formulation, development, and implementation of national marine and coastal resource programs and policies.

CHAIRMAN
Richard F. Delaney
Boston, Massachusetts
(617) 727-9530

DIRECTOR
R. Gary Magnuson
Washington, D.C.
(202) 628-9636

June 17, 1985

Senator John Chafee
Chairman
Environmental Pollution Subcommittee
Senate Environment and Public Works Committee
U.S. Senate
Washington, D.C., 20510

Dear Senator Chafee:

I am submitting the Coastal States Organization's (CSO) policy position on the ocean incineration of toxic wastes, and respectfully request its inclusion in the Subcommittee hearing record.

The CSO is a nonprofit, nonpartisan association representing the collective interests of the 35 coastal state and territorial governors in U.S. ocean and coastal policy, planning, and management. Its delegates, appointed by the governors, meet periodically to discuss and arrive at a consensus on ocean and coastal issues. The enclosed policy statement is one of many which the CSO has adopted concerning ocean and coastal legislation before the Congress.

The CSO's policy position on ocean incineration was adopted by the CSO January 17, 1984, and subsequently endorsed by the National Governor's Association. It reflects the states' concern that there are still too many uncertainties regarding the technology and environmental effects of incinerating toxic and hazardous wastes at sea for the Environmental Protection Agency (EPA) to move ahead with plans to issue permits and designate sites for ocean incineration. Therefore, the CSO has recommended several actions which should be carried out to facilitate more effective management and planning, including additional research, the development of comprehensive standards and criteria for the issuance of permits, incinerator ship liability requirements, and the preparation of contingency plans for accidental or catastrophic events.

The CSO, at this time, has no formal position regarding Senator Cranston's bill, the Ocean Incineration Research Act, S. 1039. Our organization has taken this legislation under advisement as well as EPA's proposed ocean incineration regulations and will notify the Subcommittee of any further recommendations.

We look forward to working with the Subcommittee on this issue.

Sincerely,

R. Gary Magnuson

R. Gary Magnuson
Director

WASHINGTON OFFICE: HALL OF STATES, SUITE 312, 444 NORTH CAPITOL ST., N.W., WASHINGTON, D.C. 20001

OCEAN INCINERATION OF TOXIC WASTE

The Coastal States Organization realizes the need for an effective means of disposal of hazardous and toxic wastes. It also realizes the need to protect the population and the environment from possible adverse effects of such waste disposal.

Given the ongoing concerns of coastal states about ocean waste incineration and the prospect of the U.S. Environmental Protection Agency (1) establishing precedents regarding permitting of at-sea toxic waste incineration at the earlier designated Gulf of Mexico burn site and (2) taking some action in the near future regarding designation of disposal zones off the Atlantic and Pacific coasts, the Coastal States Organization strongly endorses the following:

- Before any EPA permits or permit proposals for ocean incineration are advanced, comprehensive standards and criteria should be developed, made available for thorough public review, and promulgated as Agency Rules. EPA's proposal to permit ocean incineration of toxic and hazardous wastes under the exception clause in the Ocean Dumping Act lacks acceptable technical substantiation ~~and~~ is unacceptable to coastal states;

- Liability and limitations on liability of owners/operators of incinerator ships must be adequately spelled out to include specific events under which compensation would be granted, means for the public and damaged parties to file claims for damages, extent of compensation, and mandatory insurance provisions. The EPA should require owner/operators to assume liability as a condition of a permit being granted, regardless of limitations on liability which might exist under other statutes or common law, including those related to international waters;

- Additional studies of the entire ocean incineration process should be conducted to create baseline data and to provide conclusive evidence of risks concerning environmental health andhuman safety;

- Contingency plans for accidental or catastrophic events must be developed that will be realistic, that reflect guarantees of safe and timely action, and that outline clearly the roles of the permittee, federal, state, local government, and private authorities in any such contingency;

- The Environmental Protection Agency must make a strong commitment to equitable public participation, in fulfilling all its responsibilities regarding ocean incineration; provide full and early disclosure of information; and make all relevant data available to state and non-governmental research bodies, as well as to private groups;

- Environmental assessments and impact statements must be prepared by EPA for proposed at-sea incineration permits in accordance with the National Environmental Policy Act.

Adopted January 17, 1984

State of New Jersey
HAZARDOUS WASTE FACILITIES
SITING COMMISSION
CN 406, Trenton, N.J. 08625

COMMISSIONERS:
Ann Auerbach
Stephen Capestro
Roy T. Gottesman
John J. Heinz
Thomas Leane
Gordon Millspaugh
George Polzer
Max Weiss

Frank Dodd
Chairman

Richard J. Gimello
Executive Director

July 19, 1985

Honorable Lloyd Bentsen
United States Senate
Committee on Environment
 and Public Works
Washington, DC 20510

Dear Senator Bentsen:

I apologize for the delay in responding to your June 24, 1984, letter; I was on vacation.

Enclosed is my response to the questions raised by both you and Senator Lautenberg.

If you would like additional information, please do not hesitate to contact me at 609-292-1459.

Sincerely,

Richard J. Gimello
Executive Director

RJG:mv

Enclosure

New Jersey is an Equal Opportunity Employer

QUESTION SUBMITTED BY SENATOR LLOYD BENTSON

QUESTION: Has New Jersey adopted a Coastal Zone Management Plan? If so, what control does it give the State over location of base ports and protection of New Jersey territorial waters in connection with ocean incineration?

RESPONSE: New Jersey has adopted a Coastal Zone Management Plan, and any base port or facility constructed immediately at the water's edge (i.e., below the main tide line, or within three miles) would be considered within the State's territorial waters. Since any base port construction would have a significant impact on New Jersey's waters, this construction would have to be conducted in compliance with the appropriate State regulations.

Specifically, as of April, 1985, the At-Sea Incineration plan was not deemed consistent with the New Jersey Coastal Zone Management Plan because the information submitted was not sufficient to ensure the public health, safety, and welfare of the residents of New Jersey and protection of the coastal ecosystem (see attached).

QUESTIONS SUBMITTED BY SENATOR FRANK LAUTENBERG

QUESTION #1: Does the EPA Ocean Incineration Proposal interfere in any way with your efforts?

RESPONSE: I believe the potential for interference is real, however, at this point the EPA proposal has only served to confuse the situation in New Jersey.

As I noted in my testimony before the Subcommittee on Environmental Pollution, New Jersey and many other states have gone to great lengths to define their specific hazardous waste treatment and disposal needs. The EPA has not made a similar definitive examination of need nor have they approached the states in question for assistance. The national incineration survey appears to have been conducted after the fact and, by any reasonable standard, is inaccurate.

I offer, in support of these statements, the fact that New Jersey, New York, and Pennsylvania have completed individual state need assessments and each state has reached similar conclusions. Each has identified rotary kiln as the incineration technology of choice because of its versitility in destroying liquids, sludges, and solids, and because the liquid waste available in these states is minimal. In addition, both North Carolina and Ohio have recently authorized the construction of rotary kiln incinerators for commercial operation. Even with the RCRA amendments fully implemented, liquid waste generation is likely to decrease while sludges and solids are likely to increase. It is important to note that these conclusions were reached independently by each state. EPA's assessment on the other hand appears to have been developed in an attempt to justify the need for ocean incineration.

Furthermore, the EPA proposal is presented without a clear policy explanation about why the ocean is being considered as a medium for the treatment and disposal of hazardous waste. These inconsistencies place many states in apparent conflict with EPA. The perception of conflict is further aggravated by the pending designation of the North Atlantic burn site. After all, if the larger east coast generating states prefer technologies other than ocean incineration, and have assigned waste in accordance with these preferences, where will the waste to support such an operation in the North Atlantic come from.

How does EPA view this apparent conflict and what weight is EPA giving state preference prior to the designation of burn sites?

Finally, I would suggest that EPA and representatives from the major east coast generating states meet directly to discuss this issue prior to any further action on ocean incineration. Such discussion should take place in settings other than public hearings. I would be happy to make such arrangements through the Consortium of State Hazardous Waste Siting Authorities, Inc., which I chair.

QUESTION #2: Page III of the Commission's report discusses the impact of the 1984 RCRA amendment on the Commission's plan. The report indicates that the main change in the next updated plan will be greater use of incineration because of the 1984 RCRA restrictions on land disposal.

A. Do you have any preliminary estimates of the amount of waste which will have to be disposed of in ways other than land disposal when the 1984 RCRA restrictions take effect?

B. Do you have any preliminary estimates of how many additional incinerators will be required to dispose of this waste?

RESPONSE: The Commission's plan indicates a preliminary estimate of a minimum of 23,000 tons of hazardous waste currently being commercially landfilled that would require alternate disposal when the RCRA restrictions take effect. All of this waste is currently sent to out-of-state commercial landfills.

It should not be assumed that all of this waste will require incineration. One of the expected impacts of the new RCRA restrictions will be the promotion of on-site source reduction, recycling, and detoxification of hazardous waste, therefore, lessening the need for new, commercial facilities. However, if all of the waste does, for one reason or another, require commercial incineration, the Commission's estimate of one or more new incinerators with a capacity of 50,000 to 75,000 tons per year would accommodate this waste.

In regard to hazardous waste that is managed by on-site land disposal (non-commercially), again there is no reason at this assume to this expect will waste to enter the commercial incineration market. In fact, the national emerging trend is for large generators to manage their waste at on-site incinerators in order to comply with RCRA and to reduce their future liability.

QUESTION #3: EPA's Science Advisory Board Report raises numerous questions about incineration. How would you respond to each of the following SAB findings:

*Research on incinerator performance has occurred only under optimal burn conditions. Short-term incinerator operations under upset conditions can greatly increase incinerator loadings of the environment.

*EPA's program to assess the exposures of organisms to chemicals from incinerators has been inadequate.

*The toxicities of emissions from incinerators are largely unknown.

*While there is no documentation that incinerators result in adverse ecological effects or significant acute human health hazards, monitoring programs used so far were "few and narrow in scope."

*EPA's use of destruction efficiency as a measure of the effectiveness of incineration does not completely analyze incinerator emissions and therefore is not an adequate basis for developing exposure assessments.

RESPONSE: I am not in a position to comment on the technical issue raised by the Science Advisory Board Report, except to say that in general, additional testing to resolve this question raised should be conducted and all conclusions published at the earliest possible opportunity. The contradicting conclusions reached by the SAB and OPPE have resulted in significant confusion.

I have forwarded to the New Jersey Department of Environmental Protection a copy of Question #3 and have asked the Division of Environmental Quality, Bureau of Air Quality to respond directly.

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON

DIVISION OF COASTAL RESOURCES

PLEASE ADDRESS REPLY TO:
CN 401
TRENTON, N.J. 08625

April 30, 1985

Mr. John P. Sandstedt,
Vice President, Environmental Affairs
At-Sea Incineration, Inc.
1930 North Fleet Street
Port Newark, New Jersey 07206

Dear Mr. Sandstedt:

This letter is to advise you that I cannot make a finding of consistency on your plan to transport and incinerate liquid chemical waste through and seaward of the New Jersey Coastal Zone at this time. For a finding of consistency under Section 307(c) of the Federal Coastal Zone Management Act to be made, I would have to determine that the proposed transport and incineration operation is consistent with all elements of New Jersey's Coastal Management Program. The information submitted in support of the consistency certification and EPA research and operational permits is not sufficient to ensure the public health, safety and welfare of residents of New Jersey and protection of the coastal ecosystem - two of the eight basic coastal policies which form the foundation of the New Jersey Coastal Management Program.

In particular, the certification asserts that the design, construction, movement, and operation of the Apollo-class vessels will be in accordance with Coast Guard and EPA requirements, thereby ensuring the policies concerning Special Areas (N.J.A.C. 7:7E-3.0), Marine Fish and Fisheries (N.J.A.C. 7:7E-8.2), Shellfisheries (7:7E-8.3), Water Quality (7:7E-8.4), Important Wildlife Habitat (7:7E-8.10) and Air Quality (7:7E-8.11) will be met. EPA staff has advised me that no permits for either a trial burn or an operational permit will be considered until EPA promulgates ocean incineration regulations. This will be several months to a year away. In addition, EPA has not formally designated the North Atlantic Incineration Site. In light of the many outstanding questions raised by this Department regarding the proposed regulations (see attached statement of Dr. Donald Deieso, Director, Division of

Environmental Quality at the West Long Branch, April 18, 1985 EPA Public Hearing), I find it is premature to make a final consistency determination.

I am also concerned that risks associated with collision or other casualties have not been adequately assessed. A study titled "Analysis of Existing and Potential Navigational Hazardous in Delaware Bay" prepared by Engineering Computer Optecnomics for the Cape May County Planning Board in January 1981 indicates that collision risks are significant. Since the information supporting the EPA application indicates that 1.3 million gallons of liquid chemical waste could potentially be shipped through the New Jersey coastal zone once every two weeks and a collision involving an Apollo vessel could have a catastrophic effect not only on natural resources but also to the public health, safety and welfare of the people of New Jersey, I would like to know the probability of such an event prior to making a final determination. I understand that this issue will be addressed in EPA's Incineration Study, the details of which have yet to be released, as indicated in the attached statement.

In summary, I cannot make a determination of consistency with the New Jersey Coastal Management Program until ocean incineration rules are promulgated by EPA and active processing of the research and operational permits commences. In addition, it must be demonstrated that the probability of a liquid chemical waste casualty is acceptably remote.

Sincerely,

John R. Weingart,
Director

JRW/BT/sn
cc: Mr. Peter Tweedt, Assistant Administrator, NOAA-OCRM
Ms. Kathryn Cousins, North Atlantic Regional Manager NOAA-OCRM
Mr. David S. Hugg, III, Delaware Department of Natural Resources and Environmental Control
✓Director Lawrence Schmidt, DEP-Planning Group
Director Donald Deieso, DEP-Division of Environmental Quality
Mr. Peter Hess, DNREC Legal Office
Mr. Neil Yoskin, Greenstone and Sokol

State of New Jersey
HAZARDOUS WASTE FACILITIES
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Thomas Leane
Gordon Millspaugh
George Polzer
Max Weiss

Frank Dodd
Chairman

Richard J. Gimello
Executive Director

August 12, 1985

Honorable Lloyd Bentsen
United States Senate
Committee on Environment
and Public Works
Washington, DC 20510

Dear Senator Bentsen:

As I promised in my correspondence of July 19, 1985, attached are the comments on the EPA regulations which deal in part with the questions originally submitted to this office.

Sincerely,

Richard J. Gimello
Executive Director

RJG:mv

Attachment

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF THE COMMISSIONER
CN 402
TRENTON, N. J. 08625
609-292-2885

August 9, 1985

Ms. Majorie Pitts
Criteria & Standards Division
WH-585
U.S. Environmental Protection Agency
401 M Street S.W.
Washington, D.C. 20460

Dear Ms. Pitts:

The New Jersey Department of Environmental Protection has completed its technical review of your proposed Ocean Incineration Regulations and the two supporting reports of the Science Advisory Board and the Office of Policy, Planning, and Evaluation. Although our comments and recommendations are being submitted after the close of the comment period, we wish to point out that the OPPE report and the SAB report were not available until well after the public hearing in New Jersey. In fact, the SAB report was not obtained until the second week of June and then only after we contacted EPA Headquarters to request a copy. This procedure was contrary to the pledges of the presiding officer at the hearing who promised that the State and the interested public would be sent copies immediately upon their availability. I trust that our comments will be fully considered by EPA notwithstanding the late date of submission.

Technical comments have been generated by our Office of Science and Research (OSR) and the Division of Environmental Quality. The two sets of comments complement each other in the presentation of issues and areas of concern to the Department. Policy aspects of the proposed Ocean Incineration Regulations were presented by Dr. Donald Deieso, Director, Division of Environmental Quality at the Monmouth College hearing on April 17.

Comments of the Office of Science & Research (OSR)

I. Specific Comments on the Proposed Rules Include:

1. First of all, in their commentary on "Monitoring and Recording Requirements" (S234.60) EPA admits that there are no "Standard Methods" for environmental monitoring of this type of activity at this time and that methods are evolving as they are used and improvements are made. Secondly, they recognize in the section on the "Regulation of Incineration Site Use" (S234.79) that environmental monitoring programs

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must be established in order to identify immediate and short term as well as the long term impacts (adverse effects) from incineration operations. It can be argued that baseline environmental data must be established to spot future adverse effects and that standard methods need to be established before the above can be done and that research is necessary to pre-test these standard methods before implementation. This issue may have been considered in the unpublished "EPA's Office of Water Research Strategy Report" but if it has not, a set of research permits should probably be established to address the concerns prior to or concurrent with the trial burns. The importance of these issues will also become apparent as EPA begins to develop an "enforcement strategy" (S234.66) to further define the appropriate response measures for different types of permit violations.

To partially correct this omission and to generate baseline data it might do to recommend that the first sentence in the "Regulation of Incineration Site Used" (S234.79b) should be changed to read "An environmental monitoring program shall be implemented for each site and will include baseline or trend assessment surveys, etc."

2. Another important issue is the lack of public health emphasis in the required Contingency Plans (S234.19) for each permittee. For example, the commentary on this regulation addresses primarily the applicant's response to spill incidents in the aquatic environment as it relates to necessary cleanup and mitigation measures. No apparent reference is made to a "catastrophic event" regarding such items as explosion and fire with the concomitant toxic air plume as it may relate to the congested population centers around New York and Newark harbors. Contingency plans should reflect a worst case scenario as it relates to emergency response and public health from such an event. For example, what are the necessary emergency responses, evacuation plans, etc. to such an event in the constricted waterway of the Kill Van Kull. How does the permittee's standard operating procedure interact with the shore based effects of such an event. A risk assessment of the general effects of such an event is necessary before the effectiveness of the permittee's contingency plan can be evaluated. Such a risk assessment should therefore be included as an integral phase of the Contingency Plan.

3. Another issue with enforcement implications has to do with the discretionary need of duplicate analysis by the permit Manager in the "Waste Analysis" section (S234.58). The rule states that at the permit Program Manager's discretion, EPA may take duplicate samples for confirmatory analysis. For enforcement leverage and QA purposes it would be better to state that duplicate samples will always be taken and systematic replicate runs will be done blindly to guarantee a regulatory and scientific confirmatory tool for the routine operation of the waste handler.

4. Some general comments about the technical aspects of the proposed rules include:

   A. Because of the lack of air pollution controls, it is recommended that limits be set on chlorine and ash contents for all waste categories.

   B. Test burns should be made using a worst case waste containing the maximum levels of ash and chlorine.

   C. During the first year of operation, monthly stack tests should be required for HCL, trace metals, and PIC's.

   D. No two incinerators are identical, thus each unit must be tested using a worst case waste.

   E. Total deposition rates for HCL, trace metals and PIC's need to be estimated for each ship.

   F. Bottom ash and tank washing disposal needs to be addressed.

   G. QA plan needs to be developed for continuous monitoring equipment for CO, CO_2, O_2, temp., etc.

   H. Experience with waste disposal firms (land-based) generally shows that maintenance and housekeeping factors weigh heavily on the performance of the total operation, including the efficiency of the incinerator itself. The "at-sea" operation is exposed to not only the normal waste industry "environment", but also the ocean "environment". The regulations did not appear to address specifics of "extra" maintenance to protect equipment in these harsh "environments".

   I. The discussions about lack of PIC knowledge indicate that appropriate monitoring strategies should be developed before starting the project.

II. Specific Comments on SAB Report

The SAB has reviewed the issue of liquid hazardous waste incineration and its impact on the environment. The key conclusions related to the SAB study are:

1. Concepts of destruction efficiency do not address environmental impacts of incinerator effluents.

2. Emission studies need to be carried out under steady state and non-steady state condition typical of normal operation variation.

3. Both the physical and chemical nature of effluents need to be more completely characterized.

4. Validation of sampling and analysis procedures needs to take place and measurement of substances in stack testing studies also need better QA.

5. The dynamics of environmental transport should be evaluated in a way that is useful for total exposure assessment.

6. The transport/fate of emissions needs to be characterized by state-of-the-art field monitoring studies.

7. Assessing potential effects of incinerator effluents requires both laboratory and field studies.

8. Long term monitoring is necessary to assess environmental impacts that occur over the course of many years.

While we believe that the above points provide a basis for an aggressive research program on incineration effluent impacts in the environment, these concerns do not yield a basis for regulatory advancements by EPA regarding waste incineration in general. For example, while complete characterization of organic emissions from incinerators would be important to characterize total risks, the approach is not feasible in the context of current analytical chemistry and risk assessment capabilities. Thus, research needs to be accelerated in this area. Biological assays, such as the Ames-test, may provide useful holistic information on controlling or assessing risks from complex incinerator effluents. Perhaps EPA should begin to use biological testing in conjunction with any studies including chemical testing of incinerator effluents. In any event, EPA needs to develop a mechanism to begin to address the above research issues. Such an effort would hopefully lead to the use of better combustion technologies.

The EPA's Office of Policy, Planning and Evaluation (OPPE) concludes that ocean and land based incineration are viable, safe technologies by assuming that the premise of destruction efficiency is a useful measure of risk and that the current approach is the best now available. SAB's position and OPPE's recommendations must be reconciled.

One possibility is to structure the permitting process so as to use the research permits to answer the questions raised by the SAB in conjunction with the test burns. Also, in order to allay any fears about the railroading of an operational permit for an arguably "unproven technology", the test burn phase of the permit process should be removed from the operational component and made a part of the research permit process.

The recommendations that SAB made concerning quantifying emissions under all operating conditions, validating methodologies, studying meteorological and transport models with field validation, performing exposure assessments and determining food web interaction are all things that should be done prior to the implementation of operational permits.

Comments of the Division of Environmental Quality (DEQ)

1. The major risks with Ocean Incineration are the harbor storage and loading operations, rather than the burning itself. The Science Advisory Board, in its April 1985 Report on the Incineration of Liquid Hazardous Wastes, states that emissions from handling, transportation, and storage "may be as great or greater than the toxic chemicals emitted from the incinerators." EPA has paid insufficient attention to the regulation of loading hazardous wastes on ships.

2. Such a loading facility in New Jersey would be subject to the siting rules of the Hazardous Waste Facilities Siting Commission, as well as New Jersey DEP hazardous waste facility rules.

3. Prior to the construction or operation of the harbor storage and loading facilities, the EPA should propose and adopt specific Resource Conservation and Recovery Act (RCRA) standards. Loading ships with hazardous waste requires specialized standards, not yet included in the RCRA rules. The implication in the discussion on Transportation and Loading Issues that existing RCRA and Coast Guard rules adequately address transfer operations is not correct. For example, there are no specific federal standards for controlling air contaminants released when ships are loaded.

   It is evident that EPA has not fully considered emissions from vapors displaced when loading ships. Otherwise, the differential between the ocean-based system and the land-based system in Tables 2 and 3 for Transfer and Storage would be greater. Land-based systems for hazardous waste tank loading typically have controls on vapors displaced from the tanks. However, ships usually do not have controls for vapor displacement during filling, and emissions from filling such ships can be substantial. The DEP believes this failure to develop specific rules for the harbor facilities for hazardous waste incineration ships to be the single greatest problem with the proposed rules.

4. The New Jersey Hazardous Waste Siting Commission is planning land based hazardous waste treatment facilities to handle New Jersey generated hazardous wastes. Facilities designed to handle multi-state hazardous wastes, including a hazardous waste incineration site off the New Jersey coast, should involve regional agreements coordinated by EPA, so the burden and risks of such facilities are equitably distributed between the states within the region. New Jersey is already the host of a major commercial hazardous waste incinerator. If New Jersey is also to have a regional hazardous waste incineration site off its coast, then it is only fair that non-coastal states host regional facilities for other hazardous wastes. In particular, New Jersey relies on other states to landfill hazardous wastes which cannot be incinerated. If it is to host an off shore incineration site, there should be reciprocal provisions for New Jersey industry to landfill non-combustible hazardous wastes in facilities in other states.

5. Provision should be made for data on waste composition to be provided to the states in advance of each burn and for data on the combustion and emissions to be provided after each burn. EPA should require that the data required by 234.61 be submitted by the permittee to the relevant states, as well as the Permit Program Manager.

6. Also, the use of a scrubber on the incinerator may be warranted. The June 1981 project summary for the report of the Interagency Ad Hoc Work Group for the Chemical Waste Incineration Ship Program recommended on page 6, that, "A high-energy venturi scrubber with a pre-quench and a mist eliminator tower utilizing sea water should be considered for shipboard evaluation. Marine environmental effects of single-pass sea water scrubbing system must be evaluated, however." The use of such scrubbers should be evaluated in view of the 121,600 tons per year of hydrochloric acid which would be emitted to the atmosphere without such scrubbers. This is about the same amount of acid gases released by a major coal fired power plant. EPA's avoidance of this substantial emission level is evidenced in Tables 2 and 3 (pages 75 and 76) of its Assessment of Incineration as a Treatment of Method for Liquid Organic Hazardous Wastes. Within these summary tables of quantities of pollutants released, the emission of hydrochloric acid is conspicuously not included. Differences between land-based and ocean-based-system hydrochloric acid emissions are dramatic.

7. Toxic metal emissions:

The proposed concentration limit on each metal in each waste of 500 ppm is unnecessarily high, especially for the more toxic and carcinogenic metals. Lower limits for arsenic, cadmium, chromium, beryllium, lead, nickel and mercury should be adopted. (Berylluim should be a specified metal. Note that there is a National Emission Standard for Hazardous Air Pollutants for berylluim.) All these metals should be restricted to trace quantities, as is proposed for mercury and cadmium. Five hundred ppm should not be considered a trace quantity.

EPA should provide an example of how the Appendix A mathematical plume and oceanic dispersion model and the LDC procedures are used to arrive at metals limits for the proposed site off New Jersey. In addition to any such modelling procedures, uniform maximum trace metal concentrations should be specified within the rule. In this way the public can be assured that the quantities are truly trace, and the applicant and waste generator have a firm standard to use for planning pretreatment and disposal activities.

We agree that metal limits on the blended wastes should be less than the limits on each waste as generated. A factor of 10 is reasonable, with the metal limit on the blended waste set at the quantifiable level (or the level in normal fuel oil, whichever is higher); and the limit on each waste as generated no higher than 10 times the quantifiable level (or equal to the level in normal fuel oil, whichever is higher).

It is important that the content of the highly toxic or carcinogenic metals be minimized because there will be no particulate control devices on the shipboard incinerators, and such metals will likely be emitted as fine particulates with long atmospheric residence times. The tendency for metals to be emitted as submicrons particulates is especially true of arsenic, cadmium, mercury and lead, which have relatively low boiling points and are subject to vaporization in the hot flame and recondensation on submicron particules after the flame.

8. The "environmental performance standard" for hydrochloric acid appears to be a nonstandard if the example provided is any indication of how it will be applied. If EPA is serious about limiting total acid forming emissions, either scrubbing should be required, or the halogen and sulfur content of the waste restricted to low levels.

9. Continuous monitoring for total unburned hydrocarbon concentration should be required. Data obtained from such monitoring will assist in developing possible future limitations on products of incomplete combustion (PIC's). Without such data, it will be difficult, if not impossible, to ever set an upper limit on the concentration of total unburned hydrocarbons, which is one of the two approaches discussed for regulation of PICs.

10. NJDEP supports EPA's proposal to require periodic destruction efficiency tests. A long term data base on the effectiveness of ocean incinerators should be developed. Also, equipment deteriorates with time and waste composition may change. While the continuously monitored operating parameters will be indicators of destruction efficiency, they do not directly correlate with it. Therefore, periodic tests are prudent.

11. Within Section 234.63, relevant state environmental protection agencies should be specified as authorized representatives of the Permit Program Manager. While states with harbor facilities should already have the authority to sample and inspect records, it should be made clear that those states within 500 miles of the incineration site also have this authority.

12. Within Section 234.67, the Permit Program Manager should be able to issue a suspension order based on significant violation of permit conditions, as well as imminent and substantial risk to human health or to the environment.

13. We support the EPA proposal to forward copies of a completed application to state coastal zone management, air, and water pollution control agencies within 500 miles of the incineration site, for review and comment prior to the agency proposing a draft permit.

    The application should also be forwarded to the states with ports through which the waste may be shipped or at which vessels will be loaded.

14. Permit fees should be increased to reflect the cost of permitting and subsequent compliance determination activities.

In conclusion, we reiterate that EPA's approach to the Ocean Incineration Regulations is generally reasonable, but incomplete. The major point of the SAB report will have to be addressed by EPA in the final regulations. We expect that the above recommendations can help EPA improve the regulations. Routine operation of ocean incineration of hazardous wastes should not occur until remaining issues are fully addressed. We thank you for the opportunity to comment. If you have any questions on our comments and recommendations, please feel free to contact me directly.

Sincerely,

Lawrence Schmidt, Director,
Planning Group and Chairman of
the Department's Ocean Waste
Management Committee

c: Dr. Dennis Suszkowski, EPA Region II
Mr. Richard Gimello, NJ Hazardous Waste Facilities Siting Commission
Dr. Donald Deieso, Division of Environmental Quality
Dr. Thomas Burke, Office of Science and Research

TESTIMONY OF
JIM MATTOX
ATTORNEY GENERAL OF TEXAS
TO THE SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
CONCERNING OCEAN INCINERATION
WASHINGTON, D.C. JUNE 19, 1985

Senator Chafee, Senator Bentsen, and Members of the Subcommittee: thank you for inviting me to testify before you about incineration at sea of hazardous wastes. I regret that I am unable to attend in person. I am sending Brian Berwick, an Assistant Attorney General in my Environmental Protection Division, to testify in my place. I request that the complete text of my written testimony be introduced into the record.

As the Attorney General of Texas, I would like to discuss some of the legal issues raised by incineration of wastes at sea. I want to make clear at the outset that there is considerable legal uncertainty in the area. My remarks should not be construed as endorsements by the State of Texas of a given line of legal argument. Rather, they represent my present best prediction about how judges would rule if certain issues arose.

I am very concerned about whether private parties economically injured by accidents at sea involving toxic wastes--catastrophic spills, for example--would have adequate legal remedies available to them.

The structure of the federal law is such that in the event of a catastrophe, the people most likely to be injured in their property or economic interests would face severe legal hurdles when seeking monetary compensation.

Let me take a Texas commercial shrimper as an example. A toxic waste spill could diminish or even wipe out his harvest by killing shrimp larvae or adult shrimp. Even if, through luck, shrimp populations were not decimated, the value of his harvest would plummet due to "reputational injury," because the public would not buy aquatic products from the Gulf of Mexico after a toxic waste contamination incident.

In theory, the shrimper could help clean up the spill and could claim for his costs, as long as his efforts were consistent with the National Contingency Plan. See section 107(a)(4)(B) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §9607 (a)(4)(B). But in practice it is doubtful he could afford to contribute to the cleanup effort. Moreover, the cleanup would almost certainly not lessen the degree of injury to his business.

So naturally he would seek a legal theory under which to sue the vessel and its owner for compensatory damages. His best hope would be the law of maritime tort. This is a body of federal common law that is supplemented by federal statutes.

The hypothetical shrimper would immediately be met by a claim by the vessel owner of limitation of or exoneration from liability under the Limitation of Shipowners Liability Act, 46 U.S.C. §183 et seq. This statute was passed in 1851 to aid American shipping interests. It has far outlived its usefulness, yet it remains on the books and is invoked routinely by American and foreign flag vessels alike.

The 1851 Act limits the liability of a vessel owner for tort claims to the value of the vessel and the freight charges owed it after the incident causing the injury. The exception is if the vessel was "unseaworthy" and the owner knew it.

The ordinary perils of the sea--including negligent navigation, which causes the great bulk of marine accidents--do not constitute unseaworthiness. So if the spill of wastes that injured the Texas shrimper was caused by human error, the owner's liability will be limited.

If after the incident--a collision, for example--the vessel still had a high value, then the shrimper would have some hope. But, if the collision started a fire that destroyed the vessel, or the vessel sank, then the shrimper would get his pro rata share of a very limited fund indeed.

The amount of insurance on the vessel or its owner would not change this result. First, "hull insurance" proceeds do not become part of the amount available to the shrimper. The ship owner gets the insurance money free and clear of tort claims.

Nor does it help if the owner carried a big liability policy, because such policies pay only if the insured party is held legally liable. The 1851 federal statute would prevent the owner from being held legally liable, except for the value of the incineration vessel after the incident, which in our hypothetical case is zero. The company that issued the policy would provide a defense for the owner and would be legally entitled to raise the 1851 statute as a bar to recovery.

As bleak as the picture is for the shrimper, he has a far better hope than shoreside industries that depend only "indirectly" on the Gulf of Mexico, such as wholesale fish dealers, marina owners, hotel owners, and the like. A recent Fifth Circuit case has made clear that except in a very narrow set of circumstances, they could not recover any money at all from the vessel or its owner.

In Louisiana ex rel. Guste v. M/V Testbank, 752 F.2d 1019 (5th Cir. 1985), the Fifth Circuit declared that "indirect" economic loss, even though foreseeable, is not compensable in maritime tort except for those who sustained physical damage to a proprietary interest. Thus, when a spill of pentachlorophenol at the Mississippi Gulf Outlet impelled the United States Coast Guard to close certain waters to navigation and fishing and shrimping, commercial fishermen who normally fished those waters were held to state a proper claim for relief. Marina and boat rental operations, wholesale and retail seafood enterprises, restaurants, tackle and bait shops, and recreational fishermen, however, were thrown out of court, because their losses were held to be "purely economic." The Appeals Court expressly said state law was inapplicable. It applied federal maritime tort law and supported its liability-restricting decision as imposing a "pragmatic limitation on the doctrine of foreseeability."

If the spill had occurred on land, everyone whose economic interests were in fact injured, and whose injuries were foreseeable, would have been entitled to recovery. The mere shifting of the locus of the injurious incident onto navigable waters brought about a very different result: many or most of the plaintiffs were cut off at the threshold, for reasons of "pragmatism."

In the event of a disaster involving a waste burning ship, probably the bulk of claims would be for "pure economic losses" and thus would be foreclosed, despite their obvious foreseeability.

I am concerned about the inequities that would be worked by application of the 1851 Act and the M/V Testbank doctrine to a catastrophe involving an incinerator vessel. Often it would be difficult enough to prove a causative link between the spill of wastes and the injury complained of. Our system of justice requires all plaintiffs to bear this burden of proof. If this hurdle were surmounted and causation were shown, then every plaintiff with foreseeable injury should be fully compensated. The present scheme of law falls far short of ensuring such an outcome.

The United States Environmental Protection Agency's proposed ocean incineration regulations do not attempt to address these issues. As stated in the preamble accompanying the text of the regulations, EPA is taking the position that

> [t]he question of whether any third party recovery is available must be decided based upon other Federal or State statutes or common law principles and cannot be answered by these regulations.

50 Federal Register 8235 (Feb. 28, 1985).

You have suggested that I comment on whether a Coastal Zone Management Plan would protect Texas against unwanted activities related to ocean incineration. Texas, of course, does not have a Plan. It would be wise public policy for us to formulate one and secure approval of it by the federal Commerce Department. Nevertheless, whether such a plan would ensure that states would have a significant impact on ocean incineration decision-making is at best unclear.

First, it could be argued that incineration in the designated Gulf burn area would not affect land or water uses in Texas's coastal zone, which extends seaward three marine leagues (nine miles) out from our coast. If this view prevailed, an applicant for an ocean incineration permit would be forgiven the duty to comply with the federal Coastal Zone Management Act, 16 U.S.C. 1456(c)(3)(A), and to demonstrate consistency of the incineration activity with the state plan.

The leading case interpreting the CZMA, Secretary of the Interior v. California, ____ U.S. ___, 104 S.Ct. 656 (1984), suggests that activities seaward of the zone possibly could fall within the coverage of the consistency requirement, but provides no further guidance about the requirement's exact reach. The inquiry necessarily would be heavily factual. Among the relevant facts would be whether the incineration ships were slated to put in or load at Texas ports or pass through or near Texas waters, and whether emissions of combustion products into the air or spills into the waters would have an impact on the Coastal Zone. It is difficult to predict in the abstract what the result would be. One hopes due weight would be given to potential landward migration of mid-Gulf spills driven by winds and currents and carried in the bodies of fish and to the threat of reputational injury. But suffice it to say that both sides of the coverage question would be arguable--which means that promulgation of a Plan would not assure Texas of being able to control its own destiny.

Even if the duty to show consistency were held to rest upon the applicant, and if the applicant's proposed activity were deemed inconsistent with Texas's hypothetical plan by state officials, the applicant still would have the right to appeal to the Secretary of Commerce for a contrary declaration. The statutory power of the federal government to overrule the State increases the uncertainty about the usefulness of a Coastal Zone Management Plan as a tool with which Texas can have a real impact on the process.

Thank you again for inviting me to address you. Brian Berwick will be glad to answer any questions.

ROBERT T. STAFFORD, VERMONT, CHAIRMAN

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United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510

June 24, 1985

The Honorable Jim Mattox
Attorney General
State of Texas
Supreme Court Building
Post Office Box 12548
Austin, Texas 78711

Dear Attorney General Mattox:

Thank you for arranging for Brian Berwick of your office to deliver testimony before the Subcommittee on Environmental Pollution regarding ocean incineration. Mr. Berwick provided meaningful testimony and I am glad that he was able to attend the hearing.

I would like to follow up on the testimony with the questions listed below. Your response will be included in the permanent hearing record.

1. The question of compensable damages appears to be well beyond the scope of the EPA proposed liability regulations. Of particular concern is the matter of third party damage protection. Have you identified legislative changes that would address this gap at either the Federal or State level? Can an individual file for third party damages under Texas common law?

Could EPA's proposed regulations be modified and made legally binding to better protect all parties affected in the case of an accident involving an incinerator ship?

2. We have been provided legal opinions to the effect that the liability limits in the Shipowners' Liability Act of 1851 have been expressly waived by two Acts, the Comprehensive Environmental Response, Compensation and Liability Act, and the Clean Water Act, both of which make shipowners liable for direct damages. Do you disagree with that opinion? If so, why?

3. Another legal opinion states there is nothing in the law to prevent a State from initiating legal action if a spill occurs in a State's territorial waters or if spill residue drifts in. What actions would Texas pursue if a spill affected the State's territorial waters?

It would be appreciated if you would respond to these questions by July 12, 1985. This will enable us to give your answers full consideration prior to the second hearing on this subject.

Sincerely,

Lloyd Bentsen

Lloyd Bentsen

THE ATTORNEY GENERAL
OF TEXAS

JIM MATTOX
ATTORNEY GENERAL

July 11, 1985

Honorable Lloyd Bentsen
United States Senate
Committee on Environment
  and Public Works
Washington, D.C. 20510

Dear Senator Bentsen:

I am pleased to respond to the questions about ocean incineration posed in your thoughtful letter dated June 24, 1985.

Response to Question One

A. The Scope of the Presently Proposed Regulations

As they are presently drafted, the proposed United States Environmental Protection Agency ocean incineration regulations do not bear on protection of the ability of third parties--commercial fishermen and others who may be adversely affected in their property and in their business interests by a catastrophic spill of wastes at sea--to recover money damages for any injury. Indeed, EPA in the Supplementary Information accompanying the proposed regulations says it lacks power to operate in this arena. See 50 Federal Register 8235 (Feb. 28, 1985).

As further discussed in subpart D, below, I firmly believe that the Agency's grant of power under the Marine Protection, Research and Sanctuaries Act (MPRSA) is broad enough to authorize EPA to take third party protection into account in weighing the risks and benefits of bringing an ocean incineration program into existence. The Agency would fall into error, I believe, if it overlooked the fact that liability to provably injured third parties for a land-based release would be theoretically unlimited, whereas for a release at sea--which, ironically, would be at least equally likely to cause widespread economic injury and would be infinitely harder to contain and clean up--liability would be artificially limited except in extraordinary circumstances. The artificial limitations would flow from the Limitation of Shipowners Liability Act, 46 U.S.C. §183 et seq. (the 1851 Act) and the M/V Testbank doctrine, which states that no plaintiff may recover unless he has sustained a direct physical impact on a proprietary interest.

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B. Legislative changes that would help injured third parties secure compensation

Federal legislation certainly could redress the balance as to third party protection. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or MPRSA could be amended to specify that private tort claimants who have sustained provable injury, including indirect economic injury, from incineration vessel releases are entitled to full damages without limitation.

As to whether state legislation could validly address the gap in protection, I think it could and I have recommended action to the Texas Legislature based on that premise, but I must acknowledge that there is considerable legal uncertainty about the matter.

Askew v. American Waterways Operators, Inc., 411 U.S. 325 (1973), upheld a Florida statute imposing strict liability for damages incurred either by the state or by private persons as a result of an oil spill in state waters. The United States Supreme Court rejected the arguments that the Clean Water Act (CWA) preempted the field and that the state could not constitutionally exercise its police power respecting maritime activities concurrently with federal authority. In doing so it relied on a predecessor of CWA §311(o)(1) and (2), which contained language very similar to that in §107(h) and 114(a) of CERCLA (quoted in Subpart B of Response to Question Two). Those two sections preserve state-created liabilities from preemption and make the 1851 Act inapplicable to them. CERCLA was enacted in 1980 and it may be assumed that Congress had the *Askew* holding in mind when it drafted §107(h) and 114(a). Therefore, I believe it is reasonable to view the CERCLA language as amounting to a congressional invitation to states to legislate in the field.

On the other hand, I am aware that later cases have cast *Askew* into shadow, holding that the CWA as a whole preempts the federal common law of nuisance. See, e.g., *Middlesex County Sewerage Auth'y v. National Sea Clammers*, 453 U.S. 1 (1981), and *Conner v. Aerovox, Inc.*, 730 F.2d 835 (1st Cir. 1984), cert. denied, _____ U.S. _____, 105 S.Ct. 1747 (Mar. 18, 1985) (extending *Sea Clammers* to bar fisherman's federal maritime law and state common law damages claims as well as federal common law of nuisance claims). The erosion of *Askew* probably has gone as far as it will ever go, but if not, state statutes that are tailored to fall within the purview of CERCLA §§107(h) and 114(a)--and thus to give protection from the 1851 Act's application and arguably even from the *M/V Testbank* doctrine--may in the future be viewed as preempted by federal statutes, federal martime law, or both.

C. Availability of Texas Common Law

For reasons set out in Subpart B of Response to Question Two, I believe Texas common law would not be available to an individual seeking private tort damages for a spill of wastes from an incinerator vessel.

D. Could the regulations validly be modified for better third party protection?

I believe that without exceeding its statutory authority or being arbitrary or capricious, the Agency could change its regulations so as to improve the level of third party financial protection. It could condition permit issuance on formal written waiver by the applicant of the 1851 Act defense and of the *M/V Testbank* direct impact doctrine.

Nothing in MPRSA requires EPA to create an ocean incineration permitting program. The Act gives the Agency an extremely broad grant of authority and requires it to consider whether incineration would adversely affect health, welfare, amenities, or economic potentialities. Permitting criteria must take into account, among other things, the need for incineration, possible persistence and permanence of its effects, and land-based alternatives and the probable comparative impacts of using them.

In my opinion, MPRSA's charter is broad enough to allow and in fact require EPA to weigh the legal ramifications of ocean incineration, including the possibility of uncompensable injury. The Act's emphasis on welfare, economic potentialities, need, and comparative impacts supports my view.

In a permit the Agency may include various specific kinds of conditions and "such other matters as [it] . . . deems appropriate." If, as argued above, comparative legal ramifications are an appropriate area of inquiry for the Agency, then it is clearly appropriate for permit issuance to be conditioned on actions by permittees that would redress the balance as to third party compensibility.

Response to Question Two

I disagree with the opinion that either CERCLA or the Clean Water Act takes precedence over the 1851 Act in a manner that would with certainty improve the position of third party claimants.

A. The Clean Water Act

Section 311 of the Clean Water Act (CWA), codified as 33 U.S.C. §1321, treats oil and hazardous substance liability. It sets limits on liability for vessel spills in the absence of willful negligence or willful misconduct. See §311(f)(1). Those limits have been held to govern over the limitation authorized by the 1851 Act. See In Re Hokkaido Fisheries Co., 506 F.Supp. 631 (D. Alaska 1981).

Two points should be borne in mind, however. First, the CWA has been found not to create an implied right of action in favor of injured private parties, see Middlesex County Sewerage Auth'y v. National Sea Clammers Ass'n., 453 U.S. 1 (1981). Second, §311(o)(1) says in terms that

> [N]othing in this section shall affect or modify in any way the obligations of any owner . . . of any vessel . . . under any provision of law for damages to any . . . privately owned property . . . .

In other words, §311 has nothing whatsoever to do with private tort claims. It deals exclusively with the rights, powers, and duties of the federal government and state governments. Thus, while liability of spillers to governments is not limited by the 1851 Act, the law of liability to private parties is unaffected. Nothing in the CWA would stop a vessel owner from raising the 1851 Act defense against claims of private parties. In addition, of course, nothing in the CWA would overcome the liability-narrowing effect of the M/V Testbank doctrine.

B. CERCLA

Even more clearly than the CWA, CERCLA makes the 1851 Act inapplicable to governmental recoveries either of cleanup costs, or of natural resource damages. See CERCLA §107(h). (Again, the M/V Testbank doctrine, however, is not expressly superseded.) In addition, certain language in CERCLA suggests that Congress may have intended to abrogate the 1851 Act insofar as it would limit private tort recoveries for spills of hazardous substances from vessels:

> The owner or operator of a vessel shall be liable . . . as provided under section [114] . . . nothwithstanding any provision of the [1851] Act . . . .

CERCLA §107(h), 42 U.S.C. §9607(h).

> Nothing in this Act shall be construed or interpreted as preempting any State from imposing any additional liability or requirements with respect to the release of hazardous substances within such state.

CERCLA §114(a), 42 U.S.C. §9614(a).

Read together, these two sections make it arguable that state-created liabilities favoring private parties are not subject to the 1851 Act. The difficulty is, however, that maritime tort liability is not state-created but arises from federal common law. Federal judges may borrow from state law in fashioning maritime tort law and state judges may apply it, but it is still federal law. At least as between state common law and federal maritime law, the latter probably would be held to be the sole recourse for private claimants for vessel spills. Cf. Conner v. Aerovox, Inc., 730 F.2d 835, 842 (1st Cir. 1984), cert. denied, ____ U.S. ____, 105 S.Ct. 1747 (March 18, 1985) (holding that the CWA preempts fishermen's maritime tort claims as well as common law nuisance claims, and rejecting plaintiffs' argument that borrowed state common law would escape preemption). Therefore, the protection from application of the 1851 Act afforded by §§107(h) and 114(a) would be unavoidable, because the law invocable by, say, a shrimper whose harvest was diminished would not be (to use the language of the latter section) "additional liability or requirements" imposed by a state.

Passage of a state statute creating tort-type private rights--a statute perhaps modeled on the one tested in the Askew v. American Waterways case--might change this result, as discussed in Subpart B of Response to Question One.

Response to Question Three

I agree that neither CERCLA nor any other law would prevent Texas from securing theoretically adequate remedies for releases directly into state waters or for releases drifting into state waters. It should be noted, however, that Texas's rights and the rights of injured private people who happen to be its citizens present entirely different issues. The former are adequate in theory. The latter are not.

The State's first recourse would be CERCLA itself, which authorizes suit for state cleanup costs and for damages for injury to state natural resources. While cleanup in all likelihood would be impossible, and causation and amount of damages would be extremely difficult to prove, nevertheless, a theoretically adequate remedy exists.

Texas could try to use §311 of CWA. Section 311(f)(4) and (5) allow states to recover "costs of removal," which are very broadly defined to include costs of restoring, replacing, rehabilitating, or acquiring the equivalent of injured state natural resources. Arguably, Texas has a direct federal cause of action under those subsections.

Texas could use its own statutes which require spillers to clean up and authorize suit for recovery of state cleanup costs.

Texas could sue for civil penalties and injunctive relief under various sections of its Water Code.

Texas also probably could use the citizen suit provisions of MPRSA, 33 U.S.C. §1415(g), to seek an injunction against the spiller's ongoing violations, if any.

Thank you again for giving me the opportunity to share my views with the Committee.

Sincerely,

Jim Mattox

Jim Mattox
Attorney General of Texas

JM:tk

THE ATTORNEY GENERAL
OF TEXAS

JIM MATTOX
ATTORNEY GENERAL

July 23, 1985

Honorable Lloyd Bentsen
United States Senate
Committee on Environment
  and Public Works
Washington, D.C. 20510

Dear Senator Bentsen:

Thank you for inviting me to respond to a document entitled "ANALYSIS OF SHIPOWNER'S LIABILITY," submitted to your Committee by At-Sea Incineration, Inc., in connection with your hearings on ocean incineration. I will respond to At-Sea's points in approximately the order in which they are presented in the document.

On page 2 of the ANALYSIS document, At-Sea asserts that governments' ability to recover cleanup costs, damages for injury to natural resources, and costs of restoration of natural resources--all as distinct from private party damages--is adequately protected by existing statutes. I generally agree, but with several important qualifications.

First, and most important, in many cases cleanup would be impractical, and natural resource injury would be impossible to prove and quantify and thus would be uncompensable.

Second, both the federal Clean Water Act and the Comprehensive Environmental Response, Compensation, and Liability Act contain their own ceilings on liability to governments for cleanup and restoration costs and natural resource damages. At-Sea appropriately refers to these as "built-in limitations." Under CERCLA, for example, a vessel owner's liability would be subject prima facie to a $5 million limitation if the vessel is deemed to be carrying hazardous substances as cargo. See CERCLA §107(c)(1)(A), 42 U.S.C. §9607(c)(1)(A). (Probably this would be interpreted as a unitary ceiling, applicable to the total of cleanup costs and damages for natural resource injury. A governmental plaintiff, in other words, probably could not recover $5 million for cleanup and another $5 million for natural resource injury.) Under the CWA, the limit would be based on gross tonnage. See CWA §311(f)(1), 33 U.S.C. §1321(f)(1). Although At-Sea says that these limitations "in many cases would be surpassed so as to impose liability for the full and total costs of response and damages," this result is not obvious or certain.

512/475-2501 SUPREME COURT BUILDING AUSTIN, TEXAS 78711-2548

For example, the liability of generators for spills of wastes delivered to vessels for at-sea incineration is not clearly provided for by CERCLA, At-Sea's assertion to the contrary notwithstanding. Section 107(a)(3) of CERCLA, 42 U.S.C. §9607(a)(3), makes generators liable for cleanup of hazardous substances "at any facility." The statutory definition of "facility" expressly excludes vessels. See CERCLA §101(9), 42 U.S.C. §9601(9). Courts would have to accept a rather imaginative line of argument if they wished to circumvent this definitional problem. And even if a generator whose wastes went aboard a vessel for disposal were held exposed to liability, the $5 million ceiling might be construed as a per-incident ceiling rather than a per-party ceiling, with the result that governments would be restricted to recovering a total of $5 million from all parties rather than $5 million from the vessel owner and $5 million from each generator.

Setting aside the question whether additional potentially responsible parties (PRPs) would be reachable and for how much, the liability of the vessel owner himself might or might not be capped by CWA and CERCLA"S "built-in limitations." Both statutes lift the ceiling if the government can show "willful misconduct or willful negligence within the privity or knowledge" of the PRP, see CWA §311(f)(1), 33 U.S.C. §1321(f)(1), and CERCLA §107(c)(2), 42 U.S.C. §9607(c)(2), but the burden of proof ordinarily would be difficult to bear. CERCLA also makes the ceiling inapplicable if "the primary cause of the release was a violation (within the privity or knowledge of such [PRP]) of applicable safety, construction, or operation standards or regulations." CERCLA §107(c)(2)(A)(ii), 42 U.S.C. §9607(c)(2)(A)(ii). If the United States Environmental Protection Agency were to write sufficiently firm and clear ocean incineration regulations and permits, then arguably a spill would violate them and thus would fall within the purview of the language quoted in the preceding sentence. But it is uncertain how the courts would treat spills caused by circumstances not provably foreseeable. Such spills might be regarded as not having been caused by violations of standards--even of standards to which strict adherence is required without regard to negligence or other mental state. Or if violations of permits or regulations were found and were viewed as causative, they might be seen as outside the owner's privity or knowledge. In either event, the basic built-in limitation would apply. Finally, genuinely unforeseeable spills might be deemed Acts of God, entitling the owner under CWA and CERCLA to escape liability entirely.

Pages 4 and 5 of the ANALYSIS suggest that the doctrine established by Louisiana ex rel. Guste v. M/V Testbank, 752 F.2d 1019 (5th Cir. 1985), cert. petition pending, 53 U.S.L.W. 3839 (No. 84-1808, May 13, 1985), goes no farther in artificially limiting spillers' tort liability to third persons than would ordinary fore- seeability ideas. This fails to take account of M/V Testbank's special fact pattern. It is all well and good to recite, as At-Sea does on pages 2 and 3, general law that makes private party recovery seem possible for ocean spills. But M/V Testbank trumps that general law, holding that in a hazardous substance spill very close to shore, marina owners, bait shop owners, wholesale fish dealers, and the like, not only could not recover, but were barred at the threshhold, the defendant's motion to dismiss their claims being sustained. This procedural point is critical, because foreseeability--a competing doctrine for placing practical limitations on liability, preferred by the M/V Testbank dissenters--is an issue presented to the factfinder only after a full merits trial. Defendants who can invoke M/V Testbank and escape many claims at the threshhold have an enormous advantage over those who must face the expense and uncertainty of full discovery and a full trial. The latter group--which land-based spillers would be a part of--sometimes would win on foreseeability and sometimes would lose, and therefore always would be settlement-minded. Spillers in the marine environment in the Fifth Judicial Circuit, by contrast, always will win unless their opponents can prove direct physical impact on a proprietary interest. This means, contrary to what At-Sea says in the middle of page 5, that private claimants do indeed face greater obstacles than would a claimant economically injured by a land-based spill.

At pages 6-9, At-Sea argues that unseaworthiness and the vessel owner's privity and knowledge are elastic concepts and that courts, eager to help sympathetic claimants, will find ways to reject the owner's attempts to limit liability. But negligent navigation--pure error on the part of qualified people using sound equipment--is not regarded as unseaworthiness. It cannot and should not be assumed that judges would bend the facts or the law so as to find unseaworthiness in a case of pure navigational error, which their intuitions would tell them is an all-too-common cause of disasters.

I continue to contend that private party rights for maritime pollution incidents are very poorly protected, particularly in the Fifth Circuit, because of the 1851 Act and the M/V Testbank doctrine. Although governments' rights are better protected in theory, cleanup costs likely would be low because cleanup would be impractical, and natural resource damages would be extremely difficult to quantify. Even if cleanup were feasible and natural resource damages provable, the CWA and CERCLA's built-in liability ceilings might restrict recovery.

Sincerely,

Brian E Berwick

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Environmental Protection Division

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BEB:tk

TESTIMONY
of
Sue Ann Fruge
on Behalf of
THE GULF COAST COALITION FOR PUBLIC HEALTH
Harlingen, Texas
before the
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
of the
UNITED STATES SENATE
June 19, 1985

The Gulf Coast Coalition for Public Health would like to thank members of the Subcommittee on Environmental Pollution and its chairman for the opportunity to present the major problems we feel have contributed to our long term involvement with ocean incineration of toxic waste.

My name is Sue Ann Fruge. I am the coordinator for the Gulf Coast Coalition for Public Health, a broad based, grass-roots organization located in the Rio Grande Valley of Texas. We have been concerned with the single issue of ocean incineration of toxic waste for almost three years. During that time, we have amassed volumes of information on the subject, testified before Congress, met with Cabinet level officials of the Mexican government, traveled frequently to Washington in pursuit of input and further data, and unwittingly have emerged as an ad hoc clearing house on the issue. The statements I make today have been well researched and you will find the testimony before you is footnoted and referenced.

Two years ago I would have naively testified about the problems existing with the technology:

1. There is no need [1A,1B].

2. Ocean incineration is an unforgiving technology with no possible method of cleanup in case of accident.

3. Lack of scrubbers on the ships make it 34 to 100 times dirtier than land based incineration [2].

4. Regulation enforcement is impossible, i.e. one shiprider cannot observe 24 hours a day; due to the intense heat the stacks cannot be monitored continuously.

5. Damages to the Gulf of Mexico and the livelihoods dependent upon it have not been, and perhaps cannot be, adequately insured [3].

6. The EPA's Science Advisory Board Report concluded that too little research has been done to truly gauge the effects of ocean incineration [4].

7. It is only an interim technology and is being phased out in Europe [5].

8. Foremost, no body of water has ever experienced the magnitude of incineration as planned for our coasts. Twelve years of North Sea burning have only totaled 600,000 metric tons of waste, yet 300,000 metric tons were proposed for Gulf incineration in just three years [6]. The amount is staggering if multiplied by the thirty three ships that the EPA anticipates will be needed [7].

I also would have ardently pointed out some of the glaring problems with the proposed regulations, many of which were eliminated or compromised during June regulations workshops, but, interestingly, reappeared in the proposed rule in a form most favorable to the incineration companies:

1. Ten year permits, inflated from compromised 5 year permits.

2. $50 million coverage, dropped from the original $500 million coverage and conveniently avoiding limits on liability or third party right of recovery.

3. EPA rescission of its intent to prepare an environmental impact study.

4. Deletion of adjudicatory hearings when they would delay incineration but inclusion if it would benefit the company.

5. Failure to test each incinerator individually as required of land based incinerators.

6. No limits set on maximum number of ships to be allowed to incinerate in one site.

7. Regulations were prepared prematurely, thus excluding data from the Science Advisory Board and OPPE studies.

8. The Gulf of Mexico incineration site has been "grandfathered".

9. Most importantly, no record of compliance is considered prior to issuance of permits [8].

That might have been the extent of my testimony two years ago, not today. Many of us who have worked closely with the issue have come to the conclusion that technology, science, nor regulations have anything to do with the headlong rush toward making our seas the next victim of toxic waste disposal. The decision to do so is, quite simply, POLITICS - and I do not mean partisan. This fact, frequently suspected, was confirmed for us recently when Dr. Tudor Davies, EPA hearing officer for proposed regulations, met with local elected officials and citizens in Brownsville, Texas, in March, 1985. When asked whether science or hearing attendance numbers would affect the decision on ocean incineration, he stated, "It will be a political decision". He confirmed that remark later in March in Washington when he responded to my somewhat amazed inquiries about its validity, "It's politics ... If you feel that way, support the Boxer Legislation" (House Bill 1295) [9 - see attached copies of affidavits].

What the Gulf Coast Coalition and many others perceive as the real issue at hand is the apparent ability of a large and powerful company, Waste Management, Inc. - with its reputed stable of 12 Washington lobbyists - and the Maritime Administration - a government agency that made a premature and expensive decision and is willing to continue throwing good money after bad - to grease the skids to an extent that ocean incineration will be permitted even in the absence of adequate scientific data, and over the objections of scientists, state governments, impacted citizens and affected economic interests.

Why the push from Chemical Waste Management? Profit. To some observers the headlong rush to ocean incineration began in 1980 when Chemical Waste Management purchased an incinerator ship out of bankruptcy and awakened to the realization that the European market would soon be drying up with the anticipation of the Oslo Convention's intent to terminate ocean incineration within a few years.

Waste Management, of which Chemical Waste Management (CWM) is a subsidiary, is the world's largest waste-disposal corporation and holds more Defense Department contracts than any other disposal company [10]. For the first nine months of 1984 alone, it reported revenues of $926.8 million [11]. Impressive, second only to its ability to make phenomenal profit, it seems, is its inability to stay within the laws of these United States. [10 - The number of violations seems to have risen since the article was published.] It was when we began to study the handling of these violations that we also began to question the relationship that existed between this company and the United States Environmental Protection Agency [11].

The sordid history of CWM's involvement in ocean incineration in this country best exemplifies that coziness: In December, 1981, CWM conducted the first research burn of PCBs in the Gulf of Mexico. The testing equipment malfunctioned and little data was available, yet the concerns of an EPA scientist were overruled and the test deemed a success [12].

It was on that burn that the deadliest of all chemicals, dioxin - a chemical inappropriate for ocean incineration - was trucked from Hooker Chemical and burned aboard the Vulcanus [13]. When this irregularity was investigated by the EPA's Inspector General, his report found: "Significant changes were made in the language of this permit after the public notification period expired... ." EPA officials involved could not explain or provide any documentation to show who made this liberating change, or when and why it was made [14]. The irregularity was ignored; flagrant violations went unprosecuted. Nonetheless, CWM made from $10 to $25 million for this and the subsequent test burn [15]. The state of Alabama, where those wastes would be stored enroute to the Vulcanus, felt strongly enough about that midnight change of phrase that they are conducting their own criminal investigation of the US EPA.

The second test burn, August 1982, was monitored by the EPA and because the company was not charged for the expenses, taxpayers footed the bill, extimated at $250,000 to $300,000. Furthermore, the testing was not required to have an environmental assessment, no research protocal, no worst case analysis, and according to sources, "The EPA allowed CWM carte blanche in writing its own permits" [13].

Fascinatingly, these test results, the bulk of scientific data available on US ocean burns, were assessed for the EPA by TRW, Inc., Redondo Beach, California, while the company was simultaneously contracted to CWM [16A], clearly smacking of conflict of interest at worst - impropriety at best. Again, no measures were taken to acknowledge or correct this injustice.

Into the scenerio comes next one James W. Sanderson, choice for the EPA's number three position, advisor to Anne Gorsuch, and recipient of payroll checks from CWM and EPA simultaneously for several months. Mr. Sanderson attempted to influence decisions on the issuance of permanent permits to CWM. Although investigated by the Justice Department for conflict of interest the charges were dropped for insufficient evidence. Interestingly, Ms. Saundra Brown Armstrong, Justice Department attorney handling this case was elevated to the position of Commissioner of the Consumer Product Safety Commission.

In March, 1983, the State of Alabama filed suit against the EPA for attempting to expeditiously permit the construction of a CWM hazardous waste storage tank. The suit centered around a circumventive memo from Rita Levelle to the EPA regional administrator, "... indicates that the entire CWM facility is below the 100 year flood water elevation... This information indicates that if the facility is to be approved to handle PCBs the exercise of enforcement discretion by Region IV is necessary" [16B]. The tanks were to have been used for loading the Vulcanus ships.

In January, 1984, we were again reminded of the power welded by CWM when funding for an ocean incineration debate set up by the EPA, was withdrawn after CWM attorneys charged Jack Ravan, Administrator of Water, with "violation of ethical standards of conduct" [17]. The Gulf Coast Coalition was ultimately left with a debt of about $10,000 [18].

In March of 1984, Mr. Steven Shatzow, EPA officer, issued a recommendation for the issuance of operational permits to CWM. Among several findings was his coincidental suggestion that a research burn of over 3 million gallons of PCBs be executed. Interestingly that amount corresponded with the volume of PCBs the company had illegally stored in Emelle, Alabama [19]. Although EPA has levied a cursory fine of $600,000, CWM has failed to send more than a few thousand gallons to be legally incinerated by a land based competitor, ENSCO.

May 1984 brought a decision on the operational permits for CWM. Jack Ravan, Administrator for Water, denied the permits and attempted to implement studies that would respond to concerns raised in at least four states. Although the Coalition approved of his decision, others - perhaps less gullible - viewed the decision as simply a ploy designed to forestall tumult during an election year [21].

A regulation workshop was held in June of 1984. Representatives from the Attorney Generals' offices of three impacted states and numerous environmental groups were invited to provide input into developing regulations. Prior to the meeting a fully developed set of regulations leaked to the opposition participants. When the EPA officials were confronted with the document they denied any knowledge of its existence [22]. During the rather emotional revelation a member of industry leaped to his feet and was overheard exclaiming, "That's a privileged document. Only industry is supposed to have it!" [23] It is little wonder that many feel this regulatory process was a travesty - that ocean incineration is a foregone conclusion based not on need, not on sound technology, but on backroom "politics".

The next players participating in the ocean incineration saga are the Maritime Administration and At-Sea Incineration. Many observers feel that, in an attempt to erase the nightmare of the Liquid Natural Gas Tanker financial debacle, that MarAd was overly zealous when they extended a $55 million loan guarantee to

At-Sea Incineration for the construction of two incinerator ships three years prior to even publication of the proposed regulations [22, 25A]. MarAd has also promised an additional infusion of $13.6 million and deference to the financially troubled company in the "deletion of the requirement that the ships be completed to conform with EPA regulations" [24]. I was recently informed by a Sea Burn representative, a third ocean incineration company, that the cost overrun on the At-Sea ships may have reached $100 million. It is not surprising that the situation is viewed by some as a possibly frightening tradeoff: At-Sea ships and MarAd's dollars at the cost of gambling with American shrimping and fishing industry.

In your reference materials you will find letters from Maritime Administrator, H.D. Shear, who attempts promotion of the technology to Paul Thayer, Department of Defense, years prior to its sanction by the EPA. In one piece of correspondence he urges that "... DOD, as well as all federal agencies ... broaden the discretion accorded contracting officers who determine ... disposal" [25A]. He later advocates mushrooming the technology into nuclear waste ships [25B].

Myriad incidences have furthered entrenched the public's opinion that this poorly researched technology will become a reality at all costs and with the convenient removal of any impeding obstacles.

1. Dr. Tudor Davies, the US EPA representative to a recent London Dumping Convention meeting (the LDC is the regulatory body for ocean incineration) opposed

and prevailed in eliminating an intersessional work group on the subject [26]. This action effectively elminated further scrutiny prior to the US implementation of the technology. In addition, he attacked the opposition report as biased, i.e. written by "land based interests" while, in fact, the US position paper had been prepared from a Chem Waste contractor's data [27].

2. Gerald Chapman, an EPA employee, receptive to all ocean incineration interests, received a shotgun blast through the front window of his home and believes it is related to his handling of this issue.

3. A longtime MarAd employee, Dan Leubecker, who has been involved with the ocean incineration issue since its infancy, has been removed from his job after resisting attempts to muzzle him [28].

4. The Science Advisory Board Report, critical of incineration, received a "tone change" within the EPA after being sanctioned by its participants.

5. Sea Burn, who was refused appointments with appropriate EPA officials, was told to take back its permit application until CWM and At-Sea had first been processed; whereas, according to John Stanstedt, Vice-President of At-Sea Incineration, the EPA solicited At-Sea's application for a permit.

6. An internal EPA memo disclosed during Congresswoman Boxer's Oversight Hearing last July demonstrates EPA's reluctance in allowing the Science Advisory Board further scrutiny for fear of leaving "... lots of capital swinging in the breeze" [29].

7. EPA has demonstrated an arrogant indifference in refusing to address the other, more sophisticated, methods of ocean incineration in their regulations.

Since 1982 the Gulf Coast Coalition has rigidly adhered to a regimen of scientific approach and professional response to all facets of this issue, scrupulously avoiding the denigrating tag "hysteric" and the "NIMBY" discredidation. But, after three years of observing the absolute refusal or inability of EPA to respond to many valid concerns raised by numerous state governments and coastal residents, we felt compelled to address the key issue - the "politics" controlling this technology.

We appeal to you, the Congress of these United States, to first move this technology above reproach by supporting Senate Bill 1039. The three year moratorium for research will remove the issue from the arena of favoritism and place it in the hands of the Office of Technology Assessment where it, hopefully, will not be so privy to power brokers. Secondly, we implore you to conduct a penetrating investigation into the proliferating irregularities surrounding this "quick fix" technology. Without it public acceptance is virtually nil.

At this time I would like to present to you petitions with 19,500 signatures opposing ocean incineration, petitions with 6,896 signatures urging support of the moratorium legislation, and 22 resolutions passed by city and governmental entities from Texas alone - all representing the massive degree of concern felt by your constituents.

ATTACHMENTS

1A. Letter from H. Clay Robinson, President ENSCO, Inc. to Richard Murphy, Ph. D., THE COUSTEAU SOCIETY April 17, 1985
1B. Letter from Thomas R. Blank, Director of External Affairs, Rollins Environmental Services, Inc. to Richard C. Murphy, Ph. D., THE COUSTEAU SOCIETY April 12, 1985
2. EPA: Assessment of Incineration as a Treatment Method for Liquid Organic Hazardous Wastes, Background Report IV: Comparison of Risks from Land-Based and Ocean-Based Incineration, Page E-9 March 1985
3. EPA Ocean Incineration Testimony; Jim Mattox, the Attorney General of Texxas April 1985
4. Draft Report on Incineration of Hazardous Liquid Waste by the Science Advisory Board, Environmental Effects, Transport and Fate Committee, December 1984
5. Rules of Incineration at Sea, 1982, Annex IV to the Oslo Convention
6. EPA: Assessment of Incineration as a Treatment Method for Liquid Organic Hazardous Wastes, Summary and Conclusions, Page 78 March 1985
7. EPA: Assessment of Incineration as a Treatment Method for Liquid Organic Hazardous Wastes, Summary and Conclusions, Pages 60-61 March 1985
8. Valley Morning Star - Fruge: EPA Feeds Half Truths to 40 Locals/April 12, 1985
9. Affidavits
10. Newsweek - Hitting Below the Waste? - April 4, 1983
11. The Chicken Guarding the Foxes: US EPA's Record of Performance Controlling the Environmental Depradations of Chemical Waste Management, Inc. Testimony of Peter Montague before the US EPA Public Hearing on Ocean Incineration, April 18, 1985 Page 3
12. Valley Morning Star - Controversial Report Criticizes PCB Burns, April 1983
13. Chicago Sun-Times - 'Leper ship' caught in EPA storm - February 22, 1983
14. Letter from the Inspector General to Jack E. Ravan, Assistant Administrator for Water, December 20, 1983
15. The Washington Post - Gorsuch Friend Wins Permit Speedup - February 19, 1983
16A. The Brownsville Herald- EPA's coziness with Chem Waste stirs distrust December 7. 1983
16B. The Mobile Press - Graddick files suit to halt permit for storage tanks- March 16, 1983
17. Letter from Joan Zeldes Bernstein, Counsel for Chemical Waste Management, to Jack Ravan Janaury 6, 1984
18. Valley Morning Star - Local Organization Upset Over PCB Debate Tab January 9, 1984
19. The Wall Street Journal - Political Fight Grows Over Ocean Burning of Hazardous Waste February 8, 1984
~~20. Verbal information passed to Jackie Lockett from Charles L. Robertson, Vice President of Sales and Marketing, ENSCO, Inc.~~
21. The Washington Post - EPA Official Requests Delay in Burn Permits For Toxic Waste at Sea - April 24, 1984
22. Pacific Sun - Burning toxic Waste at sea - Week of July 20 - 26, 1984
23. Jane Rosamond, Mayor Pro-Tem, South Padre Island - Statement
24. Seatrade, Last Week in Review - December 21-27, 1984.
Letter from H.E Shear to Paul Thayer - May 11, 1983/Response dated 10 June 1983
25B. Letter from H.E. Sheer to Sidney R. Galler, Ph. D. October 18, 1983
26. Draft Report of the Eighth Meeting of the Scientific Group on Dumping 11-15 March 1985
27. US Position, Agenda Item 7. Incineration at Sea, LDC March 1985
28. Various Letters to Mr. Daniel W. Leubecker February/March 1985
29. Letter to William Ruckelshaus from Members of Congress June 22, 1984

Note. The attachments listed above have been retained in committee files.

ANSWERS TO QUESTIONS

SUBMITTED BY SENATOR LLOYD BENTSEN

to
THE GULF COAST COALITION FOR PUBLIC HEALTH
Harlingen, Texas
in Response to Testimony Submitted to
SUCOMMITTEE ON ENVIRONMENTAL POLLUTION
of the
UNITED STATES SENATE
July 17, 1985

Q. 1. Your testimony raised the issue of possible mishandling of regulatory matters by the EPA during the time that Administrator Burford was in charge of the Agency. If, as you contend, impropiety in the rulemaking process persists, what do you believe is the pressure that is motivating the Agency to make concessions to companies seeking to enter the ocean incineration market?

A. 1. The pressure motivating the EPA to make concessions to companies seeking to enter the ocean incineration market is a combination of the following factors:

(1) Immense profit potential offered by this low-end dispersion technology, sited in the ocean which is an international public natural resource.

(2) Wide influence wielded by these companies, stemming from their financial resources and political power, has enabled them to recruit upper-level former government officials and employees, who can offer them inside expertise to expedite their objectives within agencies such as EPA. Records of contributions to members of Congress are attached to these answers.

(3) A general philosophy of deregulation has become pervasive in an attempt to stimulate the economy; however, this type of "cost cutting" becomes deadly when dealing with the problem of toxic wastes.

These factors have led to a situation where government regulatory processes can be overly influenced by a profit-motivated industry with an "inside track." The federal government is plagued with its executive personnel leaving its service to go to work for the very industries their former agencies regulated or contracted. In the real world, knowing employment awaits outside, the temptation to soften regulations and to negotiate favorably is great and our public is dealing with the consequences. Barring employment by an industry, previously regulated, for a number of years, as is done in the corporate world, would solve this unhealthy problem.

Q. 2. To follow up on the statements made by Dr. Tudor Davies that the decision to permit is a political one, please describe the context in which these statements were made, and how you interpret them.

A. 2. The remarks were made by Dr. Tudor Davies under the following circumstances:

(1) A meeting was called by EPA on March 5, 1985, at Fort Brown Hotel, Brownsville, Texas, for the purpose of discussing the proposed ocean incineration regulation and to discuss the format for the public hearing on the proposed regulation to be held in Brownsville in April.

(2) The meeting was attended by EPA officials from Washington, D.C., elected officials from the Valley, interested parties such as Gulf Coast Coalition for Public Health and members of the local press.

(3) Dr. Davies answered the question whether or not scientific concern and evidence, or massive public opposition, would slow or halt the momentum to proceed with the decision to permit commercial ocean incineration.

(4) He repeated his statement that the decision was political in his office in Washington, D.C., and added that if we (the Coalition) felt that way, we should support the Boxer legislation.

The interpretation is that the regulatory process of rulemaking has little meaning in this case. It should be infered that Congress is not beyond the reach of the companies that are influencing EPA policy to proceed toward permitting commercial level burning in spite of an insufficient research data base, a lack of environmental impact study, regulation of only tanker-type incineration system (ignoring the horizontal-type equipped with scrubbers), lack of endangered species impact studies, significant exceptions to TSCA and MPRSA and a lack of a satisfactory statement of need. Therefore, only Congress can call for the research moratorium, which careful reading of the OPPE Incineration Study Background Documents and the full SAB Report indicate are needed, due to the caveats attached to virtually every finding. This pending legislation would also require development of a sorely needed national strategy for reduction of generation of toxic wastes.

Q. 3. You highlight nine deficiencies in the EPA proposed regulations. If each of these points were modified in the final regulations, including a new review of the Gulf site designation, do you believe that ocean incineration permitting should be allowed to proceed?

A. 3. No, due to the following concerns, ocean incineration should not proceed at this time at commercial levels:

(1) No adequate statement of "need" as defined by [illegible] yet exists. Proponents are pushing this interim technology as the long-term solution to perceived problems.

(2) Virtually no acceptable answers are available to the thorny liability issue, including legislation along the lines of the Price-Anderson Bill pertaining to nuclear power plant accidents. Any such solution would be extremely controversial, as a catastrophic accident at sea would damage the public financially and healthwise, and that same public would pay twice in that tax money would indemnify the companies' losses. In this case, such a law would be tantamount to government subsidy of two companies whose operations would yield huge profits.

(3) The existing regulations are potentially obsolete before promulgation due to not having addressed emerging ocean incineration technologies such as horizontal units with quenchers and scrubbers.

Q. 4. As you are aware, hundreds of tons of toxic chemicals are transported through the Gulf on a daily basis. What in your views makes incineration vessels by definition more risky?

--Has the Gulf Coast Coalition for Public Health opposed transport of raw chemicals through the Gulf?

A. 4. (1) In making a comparison to the risk of the shipping of tonnage of chemicals, some toxic, to the operation of incineration vessels in the Gulf of Mexico, some distinctions must be made. The chemical tankers are engaged in commerce, and transport pure chemicals which do not bioaccumulate or biomagnify in the marine life. On the other hand, the incineration vessels will contain "soups" of toxic wastes such as PCB's and dioxins. The result will be a deliberate introduction of these materials into the marine environment for transport and dispersion through the only means by which these substances make their way into the food web: the water. The incineration vessel, "by normal operation," will introduce contaminants and pollutants by the ton into the air and water in a chronic manner. The incinerators add the possibility of fire and/or explosion. The vessels cannot be insured while the incinerators are in operation; hence, the marine underwriters must have a reason for this: the added risk over that of a chemical tanker.

(2) No, the Coalition has not protested chemical tankers commerce in the Gulf of Mexico to date, due to the fact that delivery of these necessities by other means would be impractical.

Q. 5. It has been argued that cargo ships have a strong economic incentive to deliver their cargo without loss, possibly leading to better management than may be true of vessels carrying wastes. In your view, why are potential loss of business and substantial cleanup and liability costs not strong enough incentives for conscientious management? What additional requirements should be made, in your view?

A. 5. Several factors could add incentives for conscientious management:

(1) Permit fees should at least cover the cost of processing the application and reimburse the EPA for the cost of round-the clock shipriders, as in the National Marine Fisheries' similar program.

(2) A strong record of compliance should be required of companies engaged in the virtually unmonitorable technology, under, practically speaking, unenforceable permits.

(3) Fines levied on other violations by disposal companies have been cursory in reality, due to the huge profits involved in this business, and in some cases, have been negotiated to work as tax breaks for the companies. This practice must cease if we are ever to achieve conscientious management.

(4) Finally, the companies must waive the existing limitations on marine liability if commercial incineration at sea is ever allowed. The states and public will never accept the situation as it exists under current law.

(Ref. Peter Montague's statement, and the National Association of Governors' position paper)

Q. 6. What is your organization's position regarding the siting of additional land-based incinerators in Texas?

A. 6. This should be left to the state, the community and its economic base. On-site incinerators in Texas usually have better community acceptance. Other conditions include:

(1) Best available technology with optimum siting (no variances).

(2) Compliance with the new RCRA criteria in the strictest sense, a strong monitoring program and an effective enforcement mechanism.

Q. 7. Why, in your opinion, does the hazardous waste industry appear to have a poor record of compliance with environmental laws?

A. 7. The poor record of compliance by the hazardous waste industry is more than appearance. Please review the following documentation:

(1) Dr. Peter Montague's statement, as well as other substantiating documents with Ms. Fruge's testimony, answer the question on hazardous waste handlers' poor record of compliance with environmental law.

(2) The EPA news release dated June 6, 1985, documents this poor record at the Kettleman Hills, California facility.

(3) Strong documentation is available from the Grand Jury proceedings and a recent court proceeding from Montgomery County, Alabama.

(4) Poisoning for Profit, a recently published book by criminologists Block and Scarpitti, documents the evolution and history of the hazardous waste industry in America.

Q. 8. Does your organization believe that there is a role for ocean incineration in a national waste management strategy?

A. 8. No, our organization does not feel that ocean incineration as currently proposed has a role in a national waste management strategy for the following reasons:

(1) Research efforts to date have been totally inadequate in producing valuable data. The approach has been marred by a fallacy: prove lack of harm instead of prove it is safe. The research has not legitimately looked for PIC's, POHC's and heavy metals in stack gas, nor has it assessed marine baseline nor marine impact.

(2) Questions of liability remain unresolved and under current law have no resolution.

(3) The technology, by LDC definition, is a form of ocean dumping, and is a last resort to be used on an interim basis when need is proven. Its use was never intended for large commercial operations.

(4) It represents another "quick fix," and will be a disincentive to the development of high-end destruction technologies which will be compatible with the concept of distributive justice.

(5) Monitoring and enforcement in this "over-the-horizon" method are virtually impossible.

(6) Its proposed operation of 10-year permits on designated sites with 10-year designations will concentrate huge quantities of contaminants in small areas.

(7) Its operation places an unforgiving technology in an irretrievable natural resource with unknown consequences, in a climate of indefinable liability.

This should not be a national waste management strategy. It is a limited, "last resort" alternative.

Q. 9. Do you believe that incineration in the Gulf could be made acceptable if more stringent permitting requirements were put in place?

A. 9. Absolutely not. It is a semi-enclosed sea with a counter-clockwise gyre which traps emissions in the Western Gulf, where the rich estuaries serve as nursery grounds for valuable food resources. It also is a breeding ground for Atlantic ridley turtles, has a population of whales and a very valuable fishery. Also, many humans work on oil rigs all over the Gulf. What effects could the plume have on these unsuspecting workers far out in the Gulf?

The Gulf is shared by a community of international neighbors and must not be used further, as its designation is nine years old. Eleven burns have already been conducted in the Gulf since 1974, with no valid baseline studies, no valid impact studies nor human impact studies ever done. This is enough abuse of the Gulf.

***The* GULF COAST COALITION *For* PUBLIC HEALTH**
(512) 423-6420 Ext. 283 ☐ P. O. Box 3011 ☐ Harlingen, Texas 78551

July 17, 1985

United States Senator Lloyd Bentsen
Hart Senate Office Building
Capitol Hill
Washington, D.C. 20510

Dear Senator Bentsen,

This letter, specifically addressing questions 1, 4 and 7, is to serve as an Official Addendum to the Answers to Questions Submitted by you to the Gulf Coast Coalition for Public Health transmitted on July 12, 1985.

The crucial point in this addendum is an official request from Gulf Coast Coalition for Public Health for you to subpoena Grand Jury and Court Proceedings from Montgomery County, Alabama, which fully answer your questions on the Vulcanus/ocean incineration issue. These documents will bring to light potential criminal violation of federal environmental law and conflict of interest laws, and a potential obstruction of justice. You are respectfully requested to investigate the subpoenaed proceedings, cause them to be investigated and cause to be convened a Federal Grand Jury on the serious potential criminal violations, in your capacity as United States Senator from Texas. We understand the District Attorney of Montgomery County, Alabama, is prepared to deliver the proceedings to you upon your subpoena. We further respectfully ask that you notify the Gulf Coast Coalition for Public Health prior to the upcoming Congressional Recess of when you will act upon this request, and the approximate date that the Federal Grand Jury will convene.

Thank you very much for the opportunity to contribute to this Hearing before the Subcommittee on Environmental Pollution of the United States Senate, and be assured that the Coalition stands prepared to participate in the future in any manner you would deem appropriate.

Very truly yours,

Sue Ann Frugé

Sue Ann Frugé, Coordinator
Gulf Coast Coalition for Public Health

Attachments

ADDENDUM TO

ANSWERS TO QUESTIONS

SUBMITTED BY SENATOR LLOYD BENTSEN

to
THE GULF COAST COALITION FOR PUBLIC HEALTH
Harlingen, Texas
in Response to Testimony Submitted to
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
of the
UNITED STATES SENATE
July 17, 1985

Addendum to Question 1:

In your question you referenced the issue of possible mishandling of regulatory matters by EPA during Administrator Anne Burford's tenure. Specifically, with regard to the Vulcanus/ocean incineration issue, we are concerned that potential criminal activities have not been adequately investigated by the federal government. A generally known example is that of James Sanderson, Burford's top aide at USEPA. The allegation was that Sanderson was employed by Chemical Waste Management during the time he worked for the EPA. The Justice Department report of August 11, 1983, found that Sanderson was not employed by CWM during his tenure at EPA; no Federal Grand Jury was ever convened on this potential conflict of interest violation. During a court proceeding two weeks ago in Montgomery, Alabama, CWM representatives refused to answer a County District Attorney's subpoena for Sanderson's billing records pertaining to the Vulcanus for the period of his tenure at EPA because of the attorney-client privilege. In effect, CWM told a judge under oath that Sanderson was employed by them to work on the Vulcanus/ocean incineration issue while working at EPA. These facts demonstrate that the Executive Branch concealed this potential criminal activity to protect a company it is supposed to regulate.

Addendum to Question 4:

In this question you asked for our opinion of why there is greater risk in the incineration of hazardous wastes than simply in toxic chemical transport. As you know, law requires that the chemical make-up of hazardous materials be known by all parties at the time of transport. When an accident occurs, a system set up by government and industry responds to ameliorate or minimize damage to public and environmental health. In contrast, hazardous wastes destined for incineration are witches' brews of undefinable elements and properties, for which it is impossible to define emergency remedies. Regarding the Vulcanus/ocean incineration, the 1981 research burn manifests identify the hazardous wastes for incineration as PCBs. Chemical Waste Management's tests showed no dioxin present in the waste. However, an investigation conducted two years later revealed dioxin and hundreds (perhaps thousands) of different compounds in this waste. If a spill had occurred, no one would have had a clue as to the appropriate remediation response and the incineration process itself was not and cannot be insured.

Addendum to Question 7:

Question 7 asks our reason for doubting the compliance record of waste handlers. Following is an amplification of part (3) of our answer. A GAO Study reveals that 75% of this country's waste handlers are not in compliance with EPA minimal interim status regulations. Regarding criminal violation of environmental law, we are aware that a Criminal Grand Jury (referenced in Addendum to Question 1) in Montgomery County, Alabama, has documented potential federal criminal law violations by Chemical Waste Management in the Vulcanus/ocean incineration matter. We further understand that these proceedings are available to you from the County District Attorney. We respectfully request that you subpoena the proceedings, investigate and cause to be investigated these potential criminal violations of federal law, call for a complete investigation by a Federal Grand Jury and cause to be brought to justice the individuals involved in these potential violations. The results should demonstrate the magnitude of this national problem. In the interim, we respectfully request that you share our concern by making no vis-a-vis decision on the Vulcanus/ocean incineration issue until the Federal Grand Jury proceedings are concluded.

STATEMENT

BY

SHARRON STEWART

COASTAL RESOURCES CHAIRMAN

TEXAS ENVIRONMENTAL COALITION

Mr. Chairman and Members of the Subcommittee:

It is a pleasure to be invited to express our views on ocean incineration for the record. The Texas Environmental Coalition is an organization of about 20 groups in Texas with various interests in environmental affairs. Individual membership in these organizations number conservatively, in excess of 200,000 people. Due to our diversity, all positions expressed for the coalition are the positions of the Board of Directors.

EPA POLICY AND REGULATIONS

Our concerns can be summed up by the phrase "integrity of the process". It is the rule by which we view the actions of the Environmetnal Protection Agency. This would not have been necessary in our opinion, if the EPA had not succumbed to the persuasiveness of one applicant, and been concerned about the MARAD loans to another.

We have expressed our concern since 1974 about the risks of ocean incineration. If land-based incinerator proponent, Edward G. Kleppinger is correct in his estimation that: "Catastrophic occurences to the Vulcanus cannot be disregarded. If the Vulcanus ever had to dump a cargo of only 500,000 gallons of PCB waste, about 5 million pounds of liquid waste would be released, amounting to 2.5 million pounds of PCB's. The quantity would be sufficient to pollute a circle of a radius of 200 miles to a depth of over 4500 feet. Dumping liquid PCB waste of the quantity suggested. . . would be sufficient to deteriorate all life in the Gulf of Mexico."

Along with looking at the actual need for ocean incineration, we must look at the impact of the technology as proposed, as it affects the use and development of other waste removal and destruction methods. What happens to the economic incentives for developing waste reduction, reuse, stabilization, and high efficiency destruction technologies? We fear that by providing the "cheap quick fix" to the problem of waste disposal as in the Environmental Protection Agency proposed regulations; the process by which we develop a proper waste management strategy will be skewed, and ultimately, far greater environmental harm will occur.

We endorse the legislation introduced by Congresswoman Boxer (D-Ca.) (N.R. 1295) and Senator Cranston (D-Ca.) (S. 1039) as a reasonable approach to develop a hazardous waste reduction strategy; and as an equitable approach to get the Environmental Protection Agency back on track, dealing with both the policy and technical issues concerning ocean incineration, and the role it should play in this country's hazardous waste reduction strategy.

For the record, T.E.C. would like to introduce the December 17, 1984, Draft, *Public Concerns Regarding Ocean and Land Based Incineration* as part of EPA's Office of Policy, Planning and Evaluation Study. The draft version more accurately reflects the problems with this issuen than what appears in the final study.

The various studies done by EPA do not constitute an equivalency to an Environmental Impact Statement in our opinion. We are concerned about the "functional equivalency" and its erosive effect on the National Environmental Policy Act process. Obviously, we do not agree with EPA's decision to rescind their voluntary EIS policy, nor do we believe that they can under the 1977 EIS. One more reason public faith in EPA is slipping. At this point, we would like to see Congress amend NEPA to ensure that EPA must comply with the Act.

Our strongest concern is the inclusion of the operating history of the applicant in this or any other business. Past compliance history is an indicator of how one can be expected to perform in the future. Such a provision is intended to be discriminatory, in order to offer protection to living resources.

During the recent legislative session Texas passed the Comprehensive Hazardous Waste Management Bill. That bill, now signed into law provides requirements for the consideration of a company's history of compliance with hazardous waste law.

If Texas can recognize the need for such a provision, surely the Environmental Protection Agency can.

In addition we find it incomprehensible that EPA would eliminate the hearing examiner's report and the adjudicatory proceeding at a point where it would benefit the public; and keep it in for permit modification, which would benefit the company.

The applicant, (company) must pay the cost of permit processing, including research and monitoring. According to an article in the "Washington Post", Chem Waste made between $10 to $25 million on the 1981-1982 "test" burns while EPA paid the reported $300,000 in research costs. See article "how Five Public Companies Fared in Fiscal Year 1984" *Waste Age*, May, 1985 on the profitability of the hazardous waste disposal industry, and May 17, 1985 "Washington Post" article on federal spending for research and development.

Ship riders should also be paid for by the applicant in the same manner that observers are paid for under the Magnuson Fisheries Conservation and Management Act (MFCMA). Three ship riders should be assigned to a ship since burning does not stop while one sleeps.

Liability is a serious issue. Complete indemnity from a single catastrophic event or from any potential discharge must be provided. Direct damanges to natural resources held in public trust must be compensate for under the Comprehensive Environmental Response, Compensation and Liability Act. That compensation both in amount and mechanism for distribution must be clarified for both land and ocean based waste management activities. Furthermore, we would encourage the investigation by the Department of Justice to ascertain whether or not existing tort law is sufficient to provide for full compensation for all parties damaged directly and indirectly by an environmental disaster. Those parties most directly affected: commerical and sports fishermen, related shore side support and tourist industries should be able to recover full compensation. This may mean that in order to get any kind of permit, the vessel owner/operator will voluntarily have to give up his right to the protection of the 1851 Limitation of Shipowner's Liability Act.

We are also concerned that incinerator vessels are not included in the CERCLA definition of facility.

The research plan seems to encompass only one kind of vessel and only one kind of incinerator technology. Like the regultions, the research plan gives credence to the feeling that a special relationship exists with one applicant and EPA. Once these proposed regultions are final, operating permits can be issued without having in our estimation adequately addressed the "needs" determination, the background research on the site, or the critical research yet to be done on the surface microlayer. We are also concerned that EPA's defintiion of initial mixing will allow them to ignore the immeidate reaction when the plume hits critical surface area of the ocean.

The jump from 3 to 10 year permits is not an acceptable risk. Three year permits with annual review appears reasonable. We strongly object to the two tier permit process which automatically grants an operating permit after a trial burn. Also, the only circumstance under which we could perceive an emergency permit being necessary, would be a similar case to the unstable pesticide that was unloaded at the Port of Houston last summer. The product was unstable and Rollins did not wnat to chance using it in their incinerator, so it was directly ocean dumped. Is the provision for an emergency permit really necessary? We do not foresee a need' however, it may be necessary to comply with the Marine Protection, Research and Sanctuaries Act.

THE GULF SITE

Our first concern about the Gulf site is the attempt by EPA to "grandfather" the site by publishing the site description and the co-ordinates along with the statement that: "Use of the site may be up to 10 years." in the Federal Register.

If one looked for a worse site designation for ocean incineration than the Gulf, it could be found. You could designate one of the Great Lakes as a burn zone.

In 1974, the site selection was based on the proximity to a large percent of chemical waste producers. It was generally accepted that there were not any living resources of any value off the continental shelf. Traffic patterns for vessel transportation were not considered important. No lightering occurred in the Gulf of Mexico. The occurrence of oil and gas rigs were minimal, and predominately only in shallow water.

In 1985, the world has changed. Oil rigs are becoming common sites in depths of 1,000 to 1,700 feet. Oil tankers traverse the Gulf from 50 to 100 miles offshore transferring cargo to smaller vessels. Vessel congestion for oil and chemical products is the heaviest in the world.

The burn zone once considered an ocean wasteland, now supports a major commerical fishery for black fin and yellow fin tuna. It is a breeding ground for the gian blue fin tuna, which is caught all the way to Newfoundland. Under the MFCMA, we now prohibit the Japanese from the taking of broad-billed sword fish in the area of the WesternGulf, because it is the only know area where small juveniles are found. Kingfish, snapper, menhaden, grouper and tile fish are all sought after commerically in the area. The high fuel cost for bottom trawling for shrimp, and the closing of Mexican fishing grounds to Gulf shrimpers has forced the Gulf fleet to diminsh in size, and diversify for survival. This was an important sprots fishing area for bill fish ten years ago, more so today. Add the Texas favorite, red fish and you have a broad picture of a developed fishery.

The designated burn zone is also in the major fly way for migratory birds. Six species of threatened or endangered species traverse the area, yet we know little about their habits.

The burn zone is in close proximity to the East and West Bank of the Flower Gardens, the northernmost coral reefs in the Gulf of Mexico, a very environmentally sensitive area.

If this is EPA's idea of the best Gulf site, then it appears that no Gulf site is appropriate. At the very least, this shows changed circumstances as recognized in the old ocean dumping reulgations. Changed circumstances are not recognized in the proposed regulations. EPA appears to be determined to keep the Gulf site designated without the benefit fo public input into the process.

CONCLUSION

Finally, the public in the past has accepted a tremendous amount of environmental risks. We now havea greater knowledge of the consequences of accepting those risks. The regulations as proposed do not reflect an effort to minimize those risks. We believe the following critical issue areas must be addressed properly prior to beginning an Ocean Incineration program:

1. the operating history of the vessel owner and operator
2. liability
3. best technology for both vessels and incinerators.

ROBERT T. STAFFORD, VERMONT, CHAIRMAN

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United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510

June 24, 1985

Ms. Sharron Stewart
Coastal Resources Chairman
Texas Environmental Coalition, Inc.
Post Office Box 701
Lake Jackson, Texas 77566

Dear Ms. Stewart:

Thank you for appearing before the Subcommittee on Environmental Pollution to present testimony concerning ocean incineration. Your efforts and those of other witnesses contributed to a highly informative and full hearing on this complex subject.

Enclosed is a list of questions to follow up on issues raised at the hearing. I ask that you respond to these questions in writing no later than July 12, 1985.

As announced at the hearing, any material you wish to add to your testimony will be included in the permanent record. It is my intent as well, to submit all material available from the June 19, 1985, hearing for inclusion in the Environmental Protection Agency rulemaking docket on this subject.

Sincerely,

Lloyd Bentsen

Lloyd Bentsen

Enclosure

Questions Submitted by Senator Lloyd Bentsen

1. Raw chemicals are transported through the Gulf daily in quantities that are orders of magnitude greater than will ever occur with ocean incineration of hazardous waste. Has your organization ever opposed this activity? What, in your view, makes incineration vessels inherently more risky?

2. What additional assurances are needed that incinerator vessels will be managed properly?

3. You state in your testimony that a major deficiency of the proposed regulations is that a review of an applicant company's prior compliance with other environmental statutes is not required. To your knowledge, is this type of review currently required for permitting under other Federal statutes?

4. Please summarize the impacts that Texas has experienced as a result of prior toxic substance spills in the Gulf. What has been the outcome of efforts to obtain recovery of damages?

5. How many people, based on your observations, attended the public hearing conducted by the Environmental Protection Agency on proposed ocean incineration regulations in Brownsville, April 25, 1985?

6. Are you aware of alternative technology projects that make ocean incineration less viable?

7. Why, in your opinion, does the hazardous waste industry appear to have a poor record of compliance with environmental laws?

8. Does your organization believe that there is a role for ocean incineration in a national waste management strategy?

9. Do you believe that incineration in the Gulf could be made acceptable if more stringent permitting requirements were put in place?

7/18/85
Rec'd - Sharron Stewart
Texas Environmental
Coalition, Inc.

1. Texas Environmental Coalition has never opposed the transportation of raw chemicals. However, we have commented on Coast Guard Regulations concerning the safety of transportation by vessels and barges.

Raw chemicals are a valuable commodity and the owners have a high incentive to minimize the incidence of loss of cargo. Hazardous wastes, however, have no value and are costly to dispose of. Any loss in transit reduces the ultimate cost of disposal.

A vessel or barge moving at sea provides an unstable platform for the incinerator. This makes both the incineration process and monitoring much more difficult.

The liability question increases the risk. If a spill occurs on land, economic losses are recoverable. This is not true at sea.

If the captain feels that his vessel or crew are threatened, he can dump the entire cargo. Under the same conditions on land, incineration would stop. Spills would be contained and cleaned up. This, of course, is not possible at sea.

The problem goes beyond the risk of the incinerator vessel. It involves national policy which approves the introduction of organo-halogens into the marine enviornment in large quantities. These materials both bio-accumulate and bio-magnify. They do not go away. Ocean incineration is a low end dispersion technique. It is a last resort disposal method, and should not be viewed in any higher light.

2. Assurances that incinerator vessels will be managed properly fall into two categories: policy and technical. These issues have been addressed by us in the "Joint Comments Of Environmental And Other Citizen Organizations In Response To The U.S. Environmental Protection Agencies Draft Incineration." These are the joint comments of thirty-five organizations and are being submitted for the record in the interest of brevity. *

3. Our concern with compliance history extends to any regulatory scheme that an applicant has operated under, not just environmental statutes. This is not a new concept. It occurs in many areas such as permits to operate a radio station. Compliance history of the applicant as a basis for permit issuance or denial is paramount for public acceptance. The Marine Protection Research and Sanctuaries Act is silent on this issue. EPA need not be. They can make this a permit provision without requiring an amendment to the MPRSA.

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* The document referred to has been received and is retained in committee files.

4. The record, to our knowledge is dismal. Only in the case of the three largest oil spills, has the state sought damages.

The Alvenus is still under negotiation, as is Ixtoc I (SEDCO); with the results not expected to recover for natural resource damages, only for civil penalties. A class action civil suit by commercial fisherman against SEDCO was settled for less than 2 million dollars.

The Burma Agate is the only case that the state has settled. They settled for $50,000, and the settlement was not characterized as to types of damages. During and after the spill, the Bureau of Land Management spent 1.2 million trying to prove resource damages. Causation (dead fish, birds, etc.) was extremely difficult to prove.

As a result of Ixtoc I, oil remains in the swash zone (area between sand bars) off the Texas coast. During the winter the oil is hard like asphalt. During the spring and summer it forms tar balls and globs and washes ashore.

Vessel traffic, lightering, oil and gas production, and natural seeps all contribute to the problem. However, Ixtoc in '79 followed by the Burma Agate and the Alvenus in '84 have contributed to a blackened coastline that is not aesthetically pleasing and causes a great deal of monitary loss as the oil gets on people and their property.

This question would be more appropriately addressed by the Coast Guard, as it is their responsibility to respond and reep statistical records of this type. The National Oceanic and Atmospheric Administrations Scientific Response Coordinator for the Gulf would also be an appropriate person to address this question.

5. During the afternoon and early evening of the April 25, 1985 hearing, I checked on the number of registrants about every hour. When I returned from dinner around 7:00 o'clock p.m., I was told that the count was over 4,000. At 8:45 p.m., as I was leaving the hearing, I stood behind the sign-in table and watched. There were four stacks of cards approximately four inches high. Each stack had a penciled number in the corner: 1,000, 2,000, 3,000 and 4,000. There was a fifth stack about 3½ inches thick. I watched as the last ½ inch of cards were placed on the stack and the number 5,000 was written on the corner. Others around me made the same observations. Senator, what I do not understand is how the official count of that hearing could be only 3,400 persons. It is impossible.

6. There is a project on the Texas Gulf Coast that is an example of how to do a hazardous waste facility properly. The Gulf Coast Waste Disposal Authority, a political subdivision of the State of Texas, is proposing to build two hazardous waste treatment plants that are compatible. They are located near 14 major superfund sites, including MOTCO and BRIO. The first plant is designed to treat 100,000 tons of waste per year. It will do resource recovery, pre-treatment for blending purposes, removal of metals and biological treatment followed by solidification. The second plant is a 50,000 ton per year rotary kiln with an after-burner chamber and scrubbers. It will have PCB destruction capability. The scrubber sludge and incinerator ash will also be treated by solidification.

Thirty to fifty percent of the incinerator capacity will be dedicated to Superfund wastes. The final design will be influenced by what the regulatory agencies want and what the Keystone review committee determines to be the will of the public sector. The Keystone committee represents a group set up to elicit input from the public and elected officials as to siting of hazardous waste disposal projects. This concept is innovative, but essential.

GCWDA is ready to file notice of intent to seek a permit now. Potential customers are Monsanto, Union Carbide, Diamond Shamrock, Shell, American Oil, Marathon and Texas City Refining. Amoco is still undecided on whether to use this facility or build its own incinerator.

Although the cost of the facility will be high, the payback on the investment is expected to be in two to three years. Gentlemen, hazardous waste disposal is big business. The rewards are high, even when you do it properly.

In a recent conversation with a high ranking Waste Management official, I was chided for not wanting them to burn the Emille wastes at sea, since land based incinerator capacity is committed. I suggested that they sign up to use the GCWDA incinerator while there is still capacity available. They replied that they would get their permit.

7. Ms. Fruges' attachment "The Chick Guarding the Foxes: U.S. Environmental Protection Agency's Record of Performance controlling the Environmental Depradations of Chemical Waste Management, Inc.," states the problem more eleoquently than I can.

There are unlimited profits to be made. Enforcement is alsmost impossible, and if the big boys get caught, they negotiate fines that are mere slaps on the wrist. The incentive for good performance has been lacking.

The first real incentive for better performance are the RCRA ammendments of 1984. By forcing EPA to show the safety of hazardous waste disposal in landfills, surface impoundments or injection wells or ban such disposal; the generating industry has finally found the economic incentive for resource recovery reuse and high cost destruction techniques.

Since ocean incineration is not in this category it then becomes a disincentive for the more costly, but more environmentally sound practices.

8. Ten years ago we would have stated categorically no. In the interum, we have tried to deal with the hazardous waste issue and our past management mistakes. We must not repeat past because of lack of knowledge about the consequences of what we do. The oceans may be more unforgiving than the land.

Ocean incineration could play a role in a national waste management strategy.

Sites should be limited to a specific number of years, say ten, and it should not be extended.

Since vessels at sea are both unstable platforms for incinerators, and the environment is more corrosive than on land; all standards should be more stringent than on land.

Standards should reflect BACT as well as performance. The ten recommendations of the Texas Air Control Board to EPA would be a very good starting place.

Ocean incineration must be a limited technology. Limited in scope and duration.

9. Yes. Be we also believe in distributive justice. The Gulf site has been used since 1974 for burning. It should not be used again until both Atlantic and Pacific sites have been designated; and the current burn zone or any other, has met all of the proposed conditions for site designation.

We greatly resent the attempt by EPA to redesignate the Gulf site for ten more years without appropriate review; and we have not altered our belief that by oceanographic standards, the Gulf of Mexico is an inappropriate place to incinerate.

Senator, we have an additional concern about site designation. That is, once the regulations have been promulgated, the MPRSA requires that the United States must honor permits to burn issued by any nation that is a party to the LDC. The only designated site is the Gulf. We would have no control over the design of these permits. This could indeed be Pandora's box.

TEXAS AIR CONTROL BOARD

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June 26, 1985

Ms. Marjorie A. Pitts
Criteria and Standards Division (WH-585)
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Ms. Pitts:

The Texas Air Control Board staff has reviewed the proposed ocean incineration regulation published in the Federal Register on February 28, 1985 and the associated reports dealing with incineration issues and research strategy. As a result of that review, we have prepared the enclosed document entitled "Texas Air Control Board Staff Position Paper: Ocean Incineration Proposed Rule, 40 CFR Part 234," dated June 1985. In addition, we are resubmitting a copy of our document entitled "Texas Air Control Board Staff Position Paper on At-Sea Incineration Operations in the Gulf of Mexico," dated January 26, 1984. That paper was prepared and submitted as part of the record of the hearing held by the Environmental Protection Agency on November 21, 1983 in Brownsville, Texas to consider the issuance of ocean incineration permits. We believe that the issues raised in the earlier position paper are still relevant to the examination of current ocean incineration technology and the evaluation of the proposed regulation.

Please include the enclosed documents in the public commentary on the proposed ocean incineration regulation. We request that the Environmental Protection Agency give careful consideration to our comments before a final determination is made concerning the rule.

Sincerely,

Steve Spaw, P.E., Director
Central Regulatory Operations

RECEIVED
JUN 27 1985
DEPUTY EXECUTIVE DIRECTOR

Enclosures

cc: Mr. Bill Stewart, P.E., Executive Director
Mr. John L. Blair, Chairman
Mr. Dick Whittington, P.E., Regional Administrator, U.S. Environmental Protection Agency, Region 6, Dallas

Celebrating 150 Years of Texas Independence 1836 - 1986

TEXAS AIR CONTROL BOARD STAFF POSITION PAPER: OCEAN INCINERATION REGULATION PROPOSED RULE, 40 CFR PART 234
JUNE 1985

Introduction

On February 28, 1985 the U.S. Environmental Protection Agency (EPA) published a proposed rule for regulation of the incineration of liquid wastes at sea. In conjunction with the proposed rule, EPA has also published three reports dealing with incineration: an assessment of incineration from the Office of Policy, Planning, and Evaluation (OPPE), a research strategy from the Office of Water (OW), and a report on incineration from the Science Advisory Board (SAB). The Texas Air Control Board (TACB) staff has reviewed these documents to determine if EPA has addressed the concerns expressed in our previous position paper on at-sea incineration, which was presented in summary at the public hearing held in Brownsville, Texas on November 21, 1983 and submitted to EPA on January 26, 1984.

This position paper reflects the continuing interest of the TACB staff in various air pollution issues which deserve consideration by EPA in its review and possible promulgation of an ocean incineration regulation. Although the Texas Clean Air Act does not grant the TACB jurisdiction over incineration activities at sea, the staff is bringing these issues to the attention of EPA in an effort to ensure that the potential air pollution impact and risks of ocean incineration are evaluated, minimized, and acceptable in terms of health and environmental effects.

Evaluation of the Proposed Rule

Incinerator Design and Performance

EPA continues to follow the philosophy of specifying incinerator performance criteria rather than imposing even minimum design specifications on ocean incinerator systems. The TACB staff believes that a more conservative approach should be taken to assure adequate performance by following best available control technology (BACT) guidelines for incinerator design in addition to applying performance standards. As we have commented previously, BACT for land-based incinerators would require an afterburner section to assure complete combustion and a scrubber to remove particulate matter and acid gases. To our knowledge, EPA has not made any detailed study of the costs and feasibility of a more conservative design; therefore, neither EPA nor TACB can comment on the reasonableness of applying land-based technology to ocean incineration. The SAB has stated in its April 1985 Report on the Incineration of Liquid Hazardous Wastes that EPA "...has not characterized the differences among various incineration technologies at sea and on land to assess the expected differences they may cause in incinerator performance." The report suggests that EPA undertake such a comparison. The TACB staff believes than any such study should include a thorough examination of BACT for ocean incineration.

EPA continues to propose that for any given set of incinerators of identical design, only one will require performance verification instead of requiring individual testing for each incinerator. This practice is not only inconsistent with EPA's stated reliance on performance criteria rather than design, but is also inconsistent with EPA Region 6 (and presumably EPA headquarters) policy of testing all Prevention of Significant Deterioration (PSD) and New Source Performance Standards (NSPS) sources for criteria pollutants. If EPA will not waive performance testing of identical sources for criteria pollutants, it is not appropriate for EPA to waive performance testing of liquid waste incinerators on the basis of similarity, since toxic and hazardous wastes will be combusted.

EPA has proposed two environmental performance standards for incinerator emissions. The first would limit acid-forming emissions such that "...after allowance for initial mixing...the change in average total alkalinity in the release zone...is no more than 10% during incineration operations, based on stoichiometric calculations." The second standard would limit incinerator emissions to a level which does not exceed water quality criteria, marine life no-effect levels, or a toxicity threshold of 1% of a water concentration shown to be toxic to marine organisms.

In EPA's limit on alkalinity change, the volume of the release zone assumed by EPA seems to have been chosen arbitrarily, as does the allowable alkalinity change of 10%. There is no indication that EPA has determined that an alkalinity change of 10% will not be detrimental to the marine environment.

EPA's proposed limit on the allowable concentration of specific wastes to be burned is to be based on modeling. The SAB report recommends that additional investigations be performed to improve the dispersion models through the use of tracer studies and sampling to quantify source-receptor relationships. It is recommended that this work be done before regulations are finalized.

The TACB staff suggests that EPA adopt the more conventional approach of setting stack emission limitations at a level low enough to protect both the air and marine environment assuming worst-case dispersion in air and water using a validated model. It should be noted that any type of performance standard, whether based on modeling of waste concentrations or on stack emission limitations, must ultimately be verified by appropriate source and ambient air sampling. Without accurate emission data, exposure estimates will be of questionable value.

EPA has proposed two methods for possible future regulation of products of incomplete combustion (PICs). The TACB staff prefers the second method, which would set an upper limit on the monitored concentration of total unburned hydrocarbons in the incinerator stack based on trial burn emissions testing. Since this monitoring would provide a direct real-time correlation to incinerator performance, it could be used as a verification of destruction efficiency (DE). The TACB staff recommends that total hydrocarbon monitoring be added to the monitoring and recording requirements of §234.60, and that a performance standard be set and included in §234.47 based on analysis of trial burns incorporating testing for PICs and total hydrocarbons.

Proposed §234.56 specifies operating requirements for the incinerator system. A minimum wall temperature of 1100°C and a dwell time of at least 1.0 second are proposed. EPA does not specify, however, the criteria for location of the thermocouples to assure that the required temperature is reached and maintained. In §234.13, EPA would require the applicant to "...describe and specify the location of..." the temperature indicators and other monitoring devices. §234.53(a)(1) would require EPA to conduct a survey to "approve the siting, type and manner of use of devices measuring and recording...flame and wall temperature..." The staff believes that EPA has retained too much discretion in this area, and that specific criteria should be developed and included in the regulation. In our previous comments on ocean incineration, we proposed that the outlet of the radiant zone be monitored by multiple thermocouples to determine whether nonuniform heat distribution exists, as well as to provide a backup measurement in case of thermocouple failure.

EPA's specification for a dwell time of at least 1.0 second does not include criteria on how dwell time is to be calculated. In the literature contained in the public docket for the November 1983 hearings on ocean incineration, the dwell or residence time for the Vulcanus incinerators was calculated using the entire volume of the incinerator, including the exhaust stack volume. The staff believes that dwell time should be based only on the volume of the incinerator below the thermocouple used for measuring minimum wall temperature. In the supplementary information for proposed §234.56, EPA states that the residence times required by the Toxic Substances Control Act (TSCA) [40 CFR 761.70(a)(1)] of 2 seconds at 1200°C ± 100°C or 1-1/2 seconds at 1600°C ± 100°C are not being required for ocean incineration because the concept of residence time is "...currently overshadowed by the more important parameter of destruction efficiency." The supplement further states that "EPA formerly believed that residence times of 2 seconds or more were universally needed to achieve good destruction performance. The Agency now has an extensive data base which indicates that...tenths of one second may be sufficient in well designed incinerators for many kinds of materials. RCRA land-based incineration regulations do not have a residence time requirement and TSCA incineration regulations have a waiver provision which relies on destruction removal efficiency as the primary measure of incinerator performance." The TACB staff does not agree with

EPA's reasoning on this issue. If EPA is using stack test data from previous at-sea incineration test burns to justify the proposed lower residence time, the case for a shorter residence time cannot be made because the test data has been publicly criticized and discredited by the TACB staff and others, including the EPA OW, OPPE, and the SAB. If EPA is basing its conclusion on land-based data demonstrating good DE at lower residence time in well-designed incinerators, it must be remembered that this conclusion is not transferable to existing ocean incinerators which are not as well-designed or capable of being tested representatively for DE. It should also be noted that since land-based incinerators generally have scrubbers, performance is based on destruction removal efficiency (DRE) and cannot be compared to that of existing ocean incinerators. The staff recommends that the time/temperature requirements specified in 40 CFR 761.70(a)(1) should be required for ocean incinerators unless it can be demonstrated through valid stack testing that each incinerator can accomplish the required DE at lower values. This demonstration should be accomplished during both dockside fuel oil burns and research burns of hazardous wastes in the actual type of incineration equipment to be used. Due to the thermal stability of many hazardous compounds, an adequate margin of safety should be built into the incinerator design to assure that complete combustion will be achieved and regulatory performance standards met.

Proposed §234.60 would require the monitoring and recording of waste and auxiliary fuel feed rates and combustion air flow rate to each incinerator. As the TACB staff has stated in previous comments, this data is needed to determine continuous compliance with the residence time allowed.

The proposed operating requirements in §234.56 specify a minimum concentration of oxygen in the combustion gases of at least 3%. The TACB staff believes that an upper limit of oxygen concentration should also be specified based on the burner manufacturer's recommendations submitted as part of the permit application. As we have stated before, operation of a burner at too high an excess air rate can cause flame lift-off from the burner, bumping and vibration of the incinerator, unstable combustion, and potential loss of ignition. Many of these symptoms have been noted by passengers on previous Vulcanus test burns.

Incinerator Sampling and Monitoring

In the proposed rule for regulation of ocean incineration, EPA has placed heavy emphasis on the performance of incinerator systems. The TACB staff supports the concept of rigorous performance standards, but criticizes EPA for failing to assure that a means exists to verify that established performance standards can be met. Previous TACB staff comments on EPA's sampling and monitoring programs for at-sea incineration have discredited all of the data which has been obtained thus far in the various test burns. The staff stands by those comments and continues to insist that EPA has not verified the destruction efficiencies claimed in previous testing. The TACB staff position on sampling issues has found support in the scientific and engineering communities, as demonstrated in the reports by the EPA OW, OPPE, and the SAB.

The key issue in verifying performance is the representativeness of the stack testing. In previous tests, EPA allowed nonrepresentative sampling locations, incomplete traversing, inadequate probe length, insufficient sampling points, stratification, inadequate monitoring locations, variable test methodology, and anisokinetic sampling. All of these are addressed in existing EPA sampling and monitoring guidelines for NSPS in 40 CFR 60, which EPA chose to ignore in "developing" test methodology for ocean incineration. At the same time, EPA did not validate the alternative methods it chose to apply to ocean incinerators.

In the proposed rule, EPA would follow the sampling methods in 40 CFR 60 for trial burns. This proposal is a significant improvement over past EPA ocean incineration test programs; however, the TACB staff is interested in how EPA will apply those methods to existing ocean incinerators which are not designed for representative sampling using those methods. As we have stated previously, the Vulcanus I and II incinerators do not meet the minimum criteria for a sampleable source (primarily failing to meet the criteria for undisturbed flow 2 diameters upstream and 1/2 diameter downstream of the sampling ports). We strongly recommend that EPA require, through minimum design specifications, that ocean incinerators can be sampled in accordance with 40 CFR 60 procedures. To allow otherwise would be inconsistent with EPA's other source sampling programs. This will require modification or reconstruction of existing ocean incinerators to enable standard sampling methods to be applied. The only available alternative is the validation of the EPA test methods on each of the incinerators which do not meet minimum sampling requirements. If this is the direction EPA chooses, the staff recommends that EPA revert to 48-point traverses on the incinerators rather than using the 24-point traverses which have been approved in revisions to 40 CFR 60, Appendix A since the last test burn was completed in the Gulf of Mexico.

The staff is also concerned as to the degree of EPA's commitment to apply standard test methods to ocean incineration. EPA has provided for the approval of alternative methodology which would be determined to be equivalent through review of appropriate documentation; however, EPA has spent much of the last two years defending and justifying testing which has been generally condemned as inadequate and unrepresentative. The staff believes that alternative methodology should always receive careful consideration, but approval must be based on actual demonstrated equivalency rather than on the convenience of the permit applicant or EPA. For past trial burns, EPA's approach to the demonstration of method equivalency has been through contrived, after-the-fact justifications. When EPA was challenged on this issue, at least one EPA official resorted to the argument that "the administrator can approve an alternate method, and that is what has been done," as if the act of approval conveyed equivalency. In the opinion of the TACB staff, EPA must cease its claims that previous testing has demonstrated that existing ocean incinerators meet the performance standards if public confidence in the program is to be achieved. EPA must begin a program to develop and apply representative test methods to these sources and demonstrate through new research burns that performance can be achieved and maintained. The TACB staff believes that this must be accomplished before operating permits are issued.

The proposed ocean incineration rule does not provide sufficient specific guidance for the required incinerator monitoring. The TACB staff has determined from review of previous test burns that CO, CO_2, and O_2 concentrations were stratified (according to EPA's own definition) and that previous monitoring was inadequate to verify the reported destruction efficiencies. EPA should require the applicant to demonstrate by traversing each incinerator stack that gas concentrations are not stratified and that the selected monitoring location will be representative of the source as a whole; alternatively, EPA should require the use of multipoint probes. EPA has also retained too much discretion in the approval of monitoring equipment. EPA should develop minimum specifications for the design and performance of continuous monitoring systems for ocean incineration service, as well as prescribe calibration and maintenance procedures and their frequency. This would be consistent with the source monitoring methods found in 40 CFR 60, Appendix B.

The TACB staff recommends that EPA adopt a more consistent approach to source testing and monitoring throughout its organization. During the development of ocean incineration, the EPA OW apparently largely ignored both the existence of promulgated source sampling methods and the availability of source sampling expertise in other programs within the agency. The results of trial burns will be more credible in the scientific and technical communities if EPA applies proven test methods or thoroughly validates methods which deviate from currently acceptable practice, so that results may be compared from burn to burn or from incinerator to incinerator.

Analytical Procedures

The supplementary information section of the proposed rule states that wastes and emission samples are to be analyzed in accordance with Test Methods for the Evaluation of Solid Wastes, Physical/Chemical Methods (40 CFR 270.6) or equivalent. The rule itself, however, states only that emission sample analysis is to be done using the gas chromatography/mass spectrometry methods specified in the permit. If it is EPA's intent to include these specific methods in the permit, then §234.60 should be modified to incorporate a specific reference to them.

The TACB staff supports the inclusion of or reference to specific analytical methods in the rule. Because the staff is still trying to obtain a copy of *Test Methods for the Evaluation of Solid Wastes, Physical/Chemical Methods*, we cannot comment on the adequacy of detection limits or applicability of those particular methods to waste and emission sample analysis for ocean incineration. Several general comments can be made, however, concerning the analytical references in the proposal.

EPA has defined a "quantifiable concentration" of a waste constituent as the minimum concentration which can be detected, identified, and quantified without confirmatory analyses. The meaning of "confirmatory analyses" is not defined by EPA. The supplemental information for the proposed rule states that a quantifiable concentration is generally in the range of 1-2 ppm for an organochloride and 1-10 ppb for a metal. The TACB staff has found that detection levels for many organochlorides can be pushed to 10-50 ppb for electron capture/gas chromatography (EC/GC) and 10 ppb or less for chemical ionization/mass spectrometry (CI/MS). It is the practice of the TACB laboratory to establish and report a minimum detectable level (MDL) for each compound analyzed, and in addition, to press for the lowest MDL practical in every analysis. We recommend that EPA adopt this approach for both the analysis of wastes to be incinerated and the analysis of emission samples and ambient air samples from ocean incineration. The lowest practical detection limit for each component will provide better validation of compliance with performance standards and can aid the evaluation of the overall risk from ocean incineration through the use of actual measured concentrations in risk assessment calculations. We suggest that as a matter of routine, the EPA shiprider collect and archive for possible analysis samples of each waste mixture to be burned during each voyage to provide an independent audit of materials incinerated. We also recommend that EPA require interlaboratory comparisons of the analyses of randomly-selected waste and emission samples during research and trial burns and at unscheduled intervals during the life of each operating permit.

In previous comments on at-sea incineration, the TACB staff has criticized EPA for its failure to place more emphasis on the identification of unknown organic compounds present in incinerator emissions. EPA's DE concept relies only on the quantitation of a few principle organic hazardous constituents (POHCs), while many unidentified organics have appeared in emission samples. EPA should undertake a program to identify these organics and determine their toxicity and the effect of their presence on the adequacy of EPA's current definition of DE. The SAB report on incineration has also questioned EPA's reliance on POHCs as DE indicators, indicating that total destruction efficiency calculated on the basis of all unburned hydrocarbons is significantly lower than that calculated from POHCs alone. The SAB recommends, and we support, fully analyzing hazardous waste incinerator emissions to the extent that the toxicity of the mixture and the identity and quantity of compounds released can be evaluated.

Evaluation of Reports Related to the Proposed Rule

Assessment of Incineration as a Treatment Method for Liquid Organic Hazardous Wastes

The Assistant Administrator of OPPE states in the memo transmitting this study that "...the results are not definitive, include many assumptions, and acknowledge large data gaps." The TACB staff is in agreement with this statement. The Assistant Administrator further states that "...it is imperative for the nation to maintain the option of carefully controlled and monitored incineration activities on land and at sea." The TACB staff agrees that well-conducted incineration is a valuable technology for the permanent disposal of hazardous wastes, because the agency has extensive experience in the technical evaluation and permitting of incineration facilities. We believe that one of the key issues in the ocean incineration controversy is not necessarily the applicability of incineration as a disposal option, but the quality of the design, control, and monitoring of the incineration activity and the degree to which performance can be demonstrated and maintained. The staff agrees with EPA's statement on page one of the report that "...properly designed and operated incinerators which meet the regulatory requirements for destruction efficiency pose minimal risks to human health and the environment." In a discussion of design issues (p. 41), EPA elaborates on its decision to focus regulation on incinerator performance (DE) rather than design. "...EPA has measured acceptable incinerator performance for a wide range of burner designs, including the rotary cup burner observed throughout the Vulcanus monitoring... EPA believes that the appropriate test of any incinerator system, including the Vulcanus, is its performance characteristics rather than the design features... Most of them will perform satisfactorily with proper operating temperatures, feed rates, and maintenance." The TACB staff has found that EPA's actual performance measurements and monitoring of important incinerator parameters do not reflect EPA's stated concerns for performance. EPA's testing and monitoring program has been inadequate, temperature measurement is incomplete, and feed rates of air, fuel, and wastes have not been accurately determined. We agree that if these faults are corrected, the performance of the incinerators should be determinable. We do not argue that incineration is an inappropriate technology for waste disposal, but that EPA simply has not proved its claims of incinerator performance.

EPA also states in this report that the result of its analysis showing human health risks from ocean incineration to be one to two orders of magnitude less than for the land-based case was expected in view of the 200-kilometer distance of the Gulf site from the coast, "...and since the plume emitted during trial burns has never been detected at the shoreline." While the TACB staff agrees that such a result would be expected in view of the opportunity for dispersion of air emissions between the burn zone and the coast, we are aware of only one study which was performed in an attempt to detect plume remnants at the coast. That study was performed by the TACB staff with assistance from Texas

A&M University from August 16 through August 28, 1982 during the Vulcanus PCB test burn. Although no emissions from the Vulcanus were detected, there was only one 48-hour period during the burn when meteorological conditions were favorable for plume detection. Due to the many uncertainties in predicting the path of the plume and the limited number of samplers which could be deployed, the staff believes that the study cannot be used as conclusive evidence that the plume is not detectable at the shoreline. Because we know of no other such study which has been done, we find EPA's statement that the plume has never been detected at the shoreline to be misleading in view of the limited information available. The staff recommends that EPA conduct more extensive shoreline monitoring during future research burns using plume tracer techniques in addition to sampling for POHCs and PICs. We believe that such monitoring would be useful in alleviating public concern about the effects of air emissions on the shoreline environment.

Incineration-At-Sea Research Strategy

The research strategy by the OW indicates that tests will be conducted at either a land-based hazardous waste incinerator, an ocean-based incinerator at sea, or an ocean-based incinerator at dockside to determine the need for complete traversing of ocean incinerator stacks. The TACB staff believes strongly that it makes no sense to sample a land-based incinerator to determine the need for traversing an ocean incinerator. Existing ocean incinerators have short, large-diameter stacks which do not meet existing criteria for sampleable sources. The traverse testing must be conducted on the ocean-based incinerators in order to determine their individual performance characteristics and the validity of one-point sampling and monitoring in close proximity to both the combustion zone and the stack exit. EPA should also define what it means by a "significant" variation between single-point and traverse results for validating one-point samples. In 40 CFR 60, EPA defines stratification as a difference of more than 10% between the average concentration value and the concentration at any point for continuous monitoring purposes.

The TACB staff would support dockside fuel oil burns on ocean incinerators for the purpose of working out traversing systems and monitoring methods; however, we believe that it is imperative that EPA conduct a series of full, two-diameter traverse tests at sea to verify any conclusions based on dockside results. Because of the short, large-diameter stacks on existing ocean incinerators, we believe that total reliance on stationary dockside burns would not provide adequate representation of wind effects (and possible sample dilution) due to the combination of prevailing wind speed and vessel speed at sea. The traverses at sea should be done during a burn of hazardous wastes rather than fuel oil, as suggested in the supplementary information section of the proposed rule (p. 8252).

The section on continuous monitoring does not discuss the monitoring of air, waste, and fuel flow rates to the incinerator. Since this is required by the proposed rule, it should also be done in the research program.

In the chemical analysis section, EPA states that stack emission samples will be analyzed for compounds present in the nanogram range. We would prefer that analytical techniques be used during the research burns which might be pushed to the picogram level to enhance the validity of any exposure estimates.

EPA indicates that ambient air samples will be collected before and during research burns using high-volume samplers and polyurethane foam collection media. The TACB staff suggests that the use of solid adsorbents also be investigated for the collection of organic compounds in the ambient air.

EPA states in the research strategy that the actual research plans will be reviewed by qualified scientists prior to implementation. Because the research strategy is only an outline and therefore lacks details on specific methods and procedures to be used in conducting the research, the TACB staff believes that EPA should also make the subsequent research plans available to the public for review and comment. There are many concerned and knowledgeable individuals, environmental groups, and government agencies such as the TACB that can make a positive contribution to the planning of this research effort.

Report on the Incineration of Liquid Hazardous Wastes

The TACB staff agrees with all twelve conclusions and recommendations made in this SAB report. We note with great satisfaction that this independent advisory body of scientists and engineers agrees with many of the conclusions reached by the TACB staff concerning deficiencies in the ocean incineration program. We strongly urge that EPA fully consider and incorporate the SAB recommendations in the ocean incineration research and development program and apply the results of that program in formulating the regulations for incineration at sea.

Conclusions

- An assessment of BACT for ocean incineration should be undertaken.
- Performance testing should not be waived based on incinerator similarity.
- A more conventional approach should be adopted with respect to environmental performance standards.

- A performance standard for PICs should be developed based on research burn analyses for PICs and continuous monitoring for total unburned hydrocarbons.

- Specific criteria should be developed for incinerator temperature measurement and recording.

- Incinerator residence time and temperature should conform to 40 CFR 761.70(a)(1) unless DE can be verified by valid testing at lower values.

- Maximum oxygen concentration should be specified for various burner types.

- Ocean incinerators should be designed or modified to allow representative sampling, or new test methods should be developed and validated before operating permits are issued.

- Rigorous sampling methods should be applied to ocean incinerators under operational conditions for verification of destruction efficiency.

- Approval of alternate methods should be based on demonstrated equivalency.

- Minimum specifications should be established for the design, installation, calibration, performance certification, and maintenance of continuous monitoring systems for ocean incineration service.

- The analysis of waste and emission samples should be pushed to the lowest practical detection level.

- Incinerator emissions should be analyzed to the fullest extent practical to identify, quantitate, and determine the toxicity of unburned organics in addition to POHCs.

- The performance of existing ocean incinerators has not been adequately demonstrated.

- Ocean incinerator performance should be determinable if an appropriate source sampling and monitoring methodology is used.

- Shoreline monitoring for plume remnants should be conducted in conjunction with a plume tracer study during research burns.

- Validation of one-point incinerator sampling and monitoring strategies should be done at sea while burning characteristic wastes.

- Incinerator air, waste, and auxiliary fuel flow rates should be monitored continuously during research burns.

- Analytical techniques for emission samples should be pushed to the picogram level wherever possible.
- The use of solid adsorbents in addition to polyurethane should be investigated for collection of organic compounds in the ambient air.
- Detailed research plans for carrying out the research strategy should be made available to the public for review and comment.
- All the recommendations of the Science Advisory Board should be implemented.

The TACB staff believes that the proposal of this rule by EPA for regulation of incineration at sea is a positive step in the control, management, and disposal of hazardous wastes. Our review of the proposal and the three related reports on ocean incineration, however, indicates that changes are needed in the regulation and that more research needs to be done to assure an adequate margin of safety for the environment and to mitigate intense public concern about this disposal option. As an air pollution control agency, we are most concerned with the issues of destruction efficiency and airborne emissions from ocean incineration. Therefore, we recommend that EPA complete at least those portions of its proposed research program dealing with incinerator sampling, continuous monitoring, and destruction efficiency before any operating permits are issued.

Texas Air Control Board Staff Position Paper on At-Sea Incineration Operations in the Gulf of Mexico

January 26, 1984

Introduction

The Texas Air Control Board (TACB) is the agency charged with monitoring and protecting the air resources of the state under the provisions of the Texas Clean Air Act. For that reason, the staff has closely followed the development of at-sea incineration in the Gulf of Mexico. Special coastal ambient air monitoring was performed by the agency before, during, and after the most recent polychlorinated biphenyl (PCB) research burn in August of 1982.

A public hearing was held by the U.S. Environmental Protection Agency (EPA) in Brownsville on November 21, 1983 to hear public comment on the issuance of special and research permits for the incineration of chemical wastes in the Gulf of Mexico. In preparation for that hearing, the staff made a comprehensive review of the public docket related to issuance of the permits in order to develop an agency position on at-sea incineration at the Gulf site.

Concerns about at-sea incineration have been voiced by a large number of Texas coastal residents; however, the TACB has no jurisdiction over the approval or denial of permits for ocean incineration off the Texas coast. Under the Submerged Lands Act of 1953, Texas is one of those states whose border extends three leagues (nine nautical miles or about 10 statute miles) from the coastline, which represents the extent of the state's jurisdiction in offshore matters. The TACB is concerned, however, about various technical issues relating to the air pollution potential from ocean incineration, and is bringing these issues to the attention of EPA through the hearings process. The goal of the agency is to secure serious consideration of these issues by EPA and to ensure that potential air pollution impacts of ocean incineration are fully understood, not only as they relate to the Texas coast, but also with respect to the air/ocean interface in the immediate vicinity of the burn zone. The TACB staff requests, therefore, that this position paper become part of the hearing record in the matter of Permits HQ 83-001, HQ 83-002, and HQ 83-003, and that EPA carefully consider the issues herein in making a determination on these permits.

Evaluation of Materials Related to the Proposed Approval of Ocean Incineration Permits

The staff has evaluated the public docket for the November 21 hearing on ocean incineration. The evaluation centered on three primary areas:

1. Technical design of the incinerators aboard the M/T Vulcanus incinerator ship

2. Incinerator emissions sampling programs
3. Analysis of ambient air and source samples taken during various research burns

Evaluation of the Technical Design of the Incinerators Aboard the M/T Vulcanus

The Technical Services Division of TACB studied the incinerator design with particular attention to the combustion chamber, atomization and mixing of waste, incinerator temperature, and residence time. The following concerns were identified:

A. Combustion Chamber Design

Each of the Vulcanus' incinerators consists of a vertical cylindrical combustion chamber containing three rotary-cup burners and a short exhaust stack. Best available control technology (BACT) for land-based incinerators would also require an afterburner (plug flow reaction chamber) to assure complete combustion and a scrubber to remove particulate matter, sulfur dioxide, and halogenated compounds.

B. Atomization and Mixing

Rotary-cup atomizers are normally used in small installations because of their simplicity. Oil under pressure is forced out of the nozzle against a rotating cup. As centrifugal force drives the oil off the outlet of the cup, primary air from the integral fan unit is admitted in a rotation counter to the direction of the cup. This counter-rotation should provide considerable turbulence for mixing the sheet or droplets of oil with air. Viscosity (ability to flow) of the oil is critical to excellence of atomization. The rotary-cup burner can accommodate viscosities up to 100-300 S.S.U. (Saybolt seconds universal). In order to lower the viscosity of No. 6 fuel oil to 100 S.S.U., the fuel would have to be heated to over 200°F. No. 2 fuel oil would require no heating as long as ambient temperature was above freezing. Oil temperatures must be kept moderate to prevent gasification which would destroy the rotary-cup action.

If atomization is incomplete, the turbulence imparted is not effective and burning is delayed. The flame gets longer and unsatisfactory burning results to such a degree that there may be incomplete combustion even though the temperature is high enough and there is sufficient excess air. The result is unstable burning in which there is danger of ignition loss. A sudden change in fuel heat content is another potential cause for loss of ignition. Due to the centrifugal forces imparted to the fuel and air, it is unlikely that a rolling sea would be detrimental to burner operation. Burner fouling is due to slow combustion which results in eddy currents of oil being returned and impinging on the burner tip. This coating could also change the pattern of spray which a clean rotary cup would produce.

Due to the potential variability of the waste which could be burned, a high intensity burner which combines pressure atomization (mechanical) with steam atomization (auxiliary fluid) may be the best type to use for proper atomization. Steam consumption as low as 0.05 lb steam/lb waste is possible. Most of the combustion takes place within the burner housing itself, and the main incinerator chamber would perform the function of an afterburner, according to one burner manufacturer. BACT for land-based incinerators would still require a secondary-chamber afterburner in order to assure complete combustion.

C. Temperature

Wall temperature is measured in each M/T Vulcanus incinerator by a wall thermocouple located at burner level. Although the temperature measured by this thermocouple would be lower than the flame temperature, it would be higher than the average radiant zone temperature and should not be considered the proper point to monitor combustion chamber temperature. The outlet of the radiant zone should be monitored to verify that a temperature greater than 1200°C still exists. It is also recommended that more than one thermocouple be employed at the desired height of measurement to determine whether non-uniform heat distribution exists, as well as to provide a back-up measurement in case of a thermocouple failure.

D. Residence Time

The time/temperature requirements specified in 40 CFR 761.70(a)(1) for liquid PCB incineration require "(i)...2-second dwell time at 1200°C ± 100°C" or "(ii)...1.5 second dwell time at 1600°C ± 100°C." Due to the thermal stability of PCB's and other hazardous chemical wastes, a dwell time of less than 1.5 seconds would require a temperature in excess of 1600°C. The potential to form chemical intermediates instead of reaching complete combustion is also increased at shorter residence times. Incomplete combustion of PCB's can result in the formation of chlorinated dibenzo-p-dioxins (CDD's) and chlorinated dibenzofurans (CDF's).

Neither liquid waste feed rate nor combustion air flow rate are automatically monitored or controlled in the M/T Vulcanus incinerators. Liquid feed rate has been determined by change in tank levels, but readings have been taken several hours apart. Air flow is varied by adjustable vanes on the fan built into each rotary cup burner. In order to calculate exhaust flow rates (and therefore residence time) after the fact, liquid waste analyses and average O_2 and CO_2 during stack tests have been used. This method is not acceptable to determine continuous compliance with the residence time allowed.

Operation at too high an excess air rate can be detrimental. Not only will combustion zone temperature be lower due to the increased air mass to heat, but flame lift-off from the burner can occur. If the flame is separated from the burner and returns, bumping and vibration will result, creating unstable combustion and potential loss of ignition. The additional air would also decrease the residence time in the incinerator.

It is recommended that both liquid feed rate and combustion air flow be monitored on a continuous basis and that an air-to-fuel ratio controller be utilized to ensure proper residence time and burner operation.

Evaluation of the Incinerator Sampling Programs

The Source and Ambient Air Monitoring Division (SAAMD) of TACB studied the incinerator sampling programs, with emphasis on sampling location, test methodology, the need for particulate matter sampling, type of sampling lines, and reported destruction efficiencies. An exhaustive investigation and evaluation of the test history on ocean incineration was complicated by the large volume of material included on the public docket and by the short time allowed by EPA for submission of comments. Further, most of the sampling documentation such as raw field data and analytical data was not made available to the public, preventing an independent validation of test results. The following concerns were identified during the review of available materials:

A. Sampling Locations

The sampling locations in the incinerator stacks of the Vulcanus I and II have not been demonstrated to yield representative samples of incinerator emissions. The only published EPA requirements of which the staff is aware for selection of sampling locations are found in 40 CFR 60, Appendix A, Method 1. The application of Method 1 is specifically restricted to situations in which the sampling location is greater than or equal to two stack diameters downstream and greater than or equal to one-half diameter upstream of any flow disturbance. As represented in various test reports, the sampling ports on the M/T Vulcanus incinerators are located 1.1 diameters downstream and 0.26 diameters upstream of flow disturbances; similarly, the port location on the Vulcanus II incinerators is 0.84 diameters downstream and 0.41 diameters upstream of flow disturbances. As shown in Figure 1, however, the changes in refractory lining thickness are potential flow disturbances which were apparently not considered and which significantly reduce the upstream and downstream distances represented in the test reports.

The TACB staff would not recommend approval of these sampling locations on any source under the agency's jurisdiction without a thorough demonstration of the representativeness of the test results. In the opinion of the staff, no such demonstration has been made. EPA contends, however, that the sampling locations are adequate as determined by stack traverses made for combustion efficiency during the Shell burn (March 1977) and the Herbicide Orange Burns (July-September 1977). In the staff's judgement, the traverse procedures were inadequate and the results support the conclusion that the testing performed on the incinerator stacks does not accurately represent destruction efficiency (DE). The following deviations from proper procedures are noted:

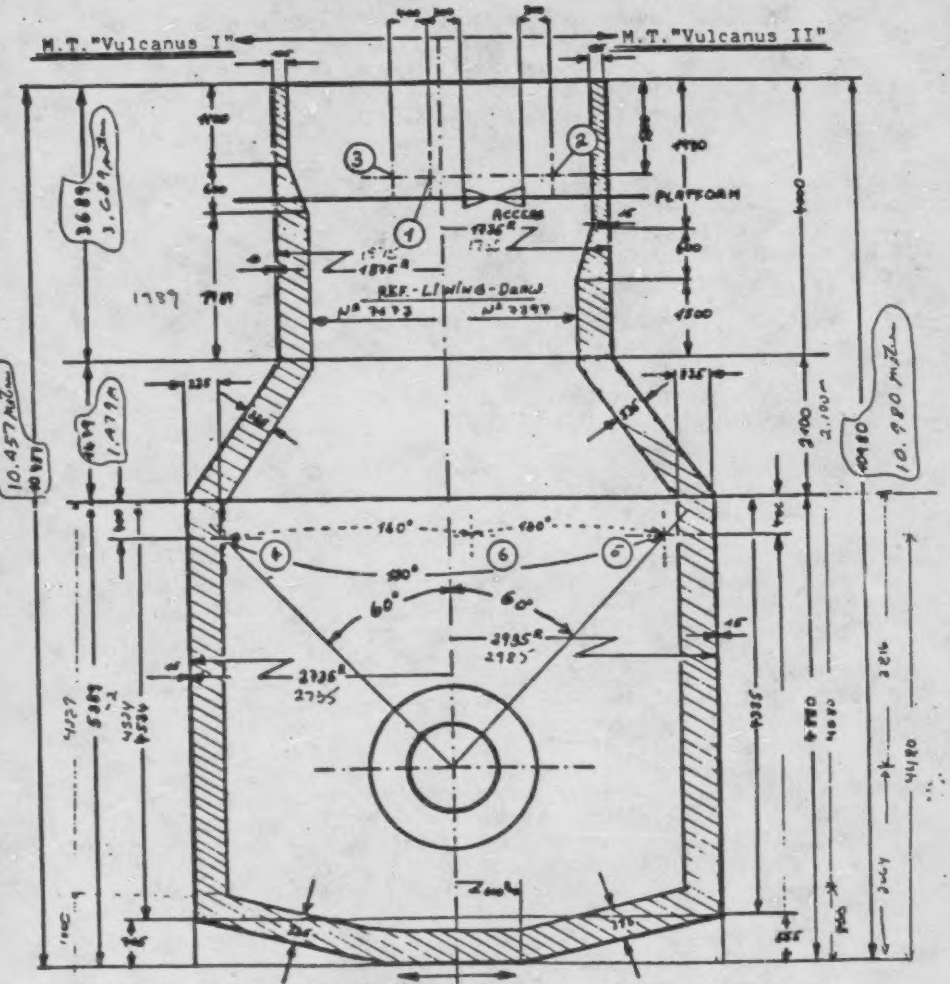
1. Traversing was done on only one diameter rather than on two perpendicular diameters as required by Method 1.
2. The probe was not long enough to reach all the traverse points on a diameter.
3. In view of the poor sampling location with respect to disturbances, more traverse points should have been sampled on each diameter (up to a maximum of 24 points per diameter).
4. Stack drawings in various reports indicate that some traverses may have been performed not in a horizontal plane, but at 20° to the horizontal, resulting in some measurements being very near or outside the stack exit.

EPA concludes that since the traverses show the combustion efficiency is not stratified except within about 15 cm. of the stack wall, a single-point sample taken anywhere beyond the 15 cm. limit will be representative of incinerator combustion efficiency. While such a measurement may be representative of the stack area beyond 15 cm, it is not truly representative of the combustion efficiency for the whole incinerator cross-section, since samples were not taken from the areas of lower efficiency in addition to the other areas in equal proportion. A valid way to demonstrate that a one-point average is representative is to compare its value against a simultaneous sample taken with a multipoint probe or multiple point traverse using the correct number and positioning of traverse points. If twenty-four traverse points on each of two

FIGURE 1

- SKETCH -

Positions of Thermocouples and Samplepipes at Incinerators


M.T."Vulcanus I"
M.T."Vulcanus II"
3
2
1
PLATFORM
ACCESS
REF.-LINING-DRAW
1835^R
1736^R
4
6
5
180°
180°
180°
60°
60°
2935^R
2985
2736^R
2755
3689
3.689 m
1479
1.479 m
10.457 meter
3100
2.100
10980
10.980 meter
4180

1) Sample-pipe #-1
2) Spare Sample-pipe #-2
3) Thermocouple "Upper-Level"
4)+5)+6) Thermocouples "Middle-Level" (either 60° staggered to burner centre or in the middle burners)

diameters are used to average the combustion efficiencies at each point for equal sampling times, eight traverse points representing the 1/6 of the stack area within 15 cm. of the wall would be included in the average combustion efficiency. Since the combustion efficiency is lower near the stack wall, the overall efficiency would be lower than that represented by the one-point sample taken by EPA.

Since EPA's traverse data shows the combustion efficiency to be lower and CO concentration to be significantly higher near the wall, it follows that the concentration of pollutants near the wall would be higher than the concentration at the single measurement point, and therefore the destruction efficiency near the wall is likely to be lower than that measured at the single point by EPA. If pollutant traverses were made, it is likely that the overall DE will be lower than that measured by EPA.

Also of concern is the possibility that the pollutant concentrations obtained at the sampling locations are diluted with ambient air because of the proximity of the sampling to the exit of the incinerator, where the combined effects of stack turbulence and wind flow around the stack can have significant impact on the samples. Such dilution would make the destruction efficiency appear higher than it actually is. EPA has not addressed this possibility. EPA's finding that combustion efficiencies are not stratified is not adequate proof that dilution does not exist. If the dilution at the sampling points is uniform, then so will be the calculated combustion efficiency, but the DE will be too high because of the diluted pollutant concentrations.

The failure to construct the incinerators so that adequate sampling may be carried out results in samples being taken not in a true stack, but in the combustion zone itself. This can be seen both in the published calculations of the incinerator volume, which includes the volume of the stack, and in the permit condition which requires that no flame be visible above the plane of the stack exit. If combustion is still in progress at the sampling site, then one-point samples cannot be representative of actual performance.

Further evidence of the inadequacy of EPA's one-point sampling method can be seen from concentration data taken during the partial traverses which were intended to show that traversing was unnecessary. Table V-6 from the report of the Shell Research Burn II shows sampling results from the incinerators at various probe depths during various test series. A summary of that table for the starboard incinerator follows:

Probe Depth cm	CO ppm	O_2 %	HCl %	Cl_2 ppm	Unburned Organochlorides % of Feed
22	75	11.3	5.3	50	.002
25	40	9.0	6.0	40	.007
117	30	9.8	5.2	70	.013
117	35	10.0	5.7	180	.008
mean value =	45	10.0	5.6	85	.008
Range, %	-33/	-10/	-7.1/	-53/	-75/
Difference	+67%	+13%	+7.1%	+112%	+62%

There is a wide variation in concentration from point to point and from test series to test series at the same point, particularly in Cl_2 concentration. A similar summary can be constructed for the port incinerator for a single point:

Probe Depth cm	CO ppm	O_2 %	HCl %	Cl_2 ppm	Unburned Organochlorides % of Feed
134	-	-	6.1	350	.002
134	-	-	6.2	10	.002
134	35	10.6	5.3	360	.004
134	50	12.5	4.0	50	.005
Mean Value =	42.5	11.6	5.4	193	.003
Range, %	-18/	-8.2/	-26/	-95/	-33/
Difference	+18%	+8.2%	+15%	+87%	+54%

The results of the Herbicide Orange burn (Table 16, page 53 in the report) present similar findings. The table below shows the range of percent difference from the mean values:

	O_2 (%)	CO_2 (%)	CO (ppm)	HC (ppm)
Mean Value	8.9	10.3	10	25
Range, % Difference	-39 to 44	-35 to 47	-90 to 200	-92 to 460

It does not appear from this traverse data that one-point sampling will be representative of emissions from the incinerators.

EPA has also erred in selecting a continuous monitoring location in the incinerators. Again, 40 CFR 60 establishes the only available EPA requirements for continuous monitoring of gases from sources. Appendix B of 40 CFR 60 specifies that a monitoring location be selected which is demonstrated to be nonstratified and directly representative of emissions. EPA defines stratification as:

> "...a condition identified by a difference in excess of 10% between the average concentration in the duct or stack and the concentration at any point more than 1.0 meter from the duct or stack wall."

Compliance with the requirement for representative samples may be accomplished by use of a multipoint probe (subject to demonstration of representativeness at several operating conditions). Compliance with the nonstratification requirement can be done by traversing. Since EPA could not perform an adequate traverse and did not compare average concentration with concentrations at each point to satisfy the 10% requirement, and since a multipoint probe was not used, the continuous monitoring cannot be considered to be representative of incinerator conditions. Further, 40 CFR 60 specifies that single-point monitor probes may not extract samples within 1.0 meter of the stack wall. The continuous monitoring in the incinerator stacks was done at distances considerably less than 1.0 meter from the wall. EPA has also not established performance specifications and tests for continuous monitoring systems used in ocean incineration service.

EPA has also failed to specify specific sampling and monitoring locations in either the permits under consideration or in their referenced methodology. The permits call for continuous monitoring at a point "0.9 meters below the stack exit plane." There is no requirement, however, that monitoring be done at any specific point on that plane. EPA has stated throughout the test documentation that representative monitoring can be performed only beyond a specific distance from the incinerator wall, such as 15 centimeters or 40 centimeters. Failure to specify such limitations in the permits may lead to the collection of samples which EPA cannot support as representative. Likewise, no limitation was included in any of the proposed permits for the probe position for removal of samples for determining destruction efficiency. This is a glaring inconsistency based on the findings of EPA's own research; however, it should be noted that the TACB staff does not agree that EPA has made a proper demonstration of the representativeness of any sampling location in the incinerators.

B. Test Methodology

The test history of ocean incineration does not reflect the use or development of a consistent sampling protocol for incinerator testing. The report of the Herbicide Orange Burn states that the USAF benzene train was a modified version of the method described in Appendix E of Final Environmental Statement on Disposition of Orange Herbicide by Incineration, U.S. Department of the Air Force, November 1974 (not on public docket for review). The solid sorbent train was described as a modification of the EPA Method 5 train. The TNO report on the December 1981 test burn in the Gulf of Mexico states that "...there was no time to design and test special stack sampling methods and equipment." A system was developed, however, to avoid using long heated Teflon lines. After this system failed, the sampling system reverted to use of the Teflon lines. The TRW report on the PCB burn of August 1982 stated that the sampling procedures generally followed EPA Method 5. The M/T Vulcanus II burn in February 1980 used the VOST train in accordance with the procedures developed for its use. In many cases, the testing procedures varied from voyage to voyage and from sample to sample. Most of these tests have been used by EPA either to justify method changes or to "demonstrate" the effectiveness of the incinerators, although it is difficult to justify comparison of results obtained by different methods without side-by-side simultaneous comparison of methods on the same source.

The hearing record from the August 1982 public hearing in Brownsville shows that EPA, by its own admission, was remiss in not explicitly working out protocols and sampling requirements in advance of the PCB research burn. It was further stated that the upcoming DDT research burn to determine the DE for DDT will not take place until EPA has specified the appropriate protocols to be used in that sampling. The draft research Permit HQ 83-003 references various sampling and analytical methods in Appendix A; however, these procedures were not made available for review on the public docket. The staff did obtain a copy of Sampling and Analysis Protocol for the Determination of PCB Emissions from Shipboard Liquid Incinerators. Because this is a PCB method, and because EPA apparently does not have any data concerning the collection and analysis of DDT from ocean incineration using this method, it must be concluded that EPA has not fulfilled its promise to specify an appropriate protocol for measurement of DDT destruction efficiency before a burn takes place.

EPA still does not appear to be ready to specify and promulgate specific sampling and analytical methods for ocean incineration, instead preferring to approach each test on a case-by-case basis, each time pulling together a collection of previously used methods and procedures modified as deemed appropriate for the particular application at hand. Most of the methods referenced in HQ-83-003 do not appear to be particularly new or designed for specific application to ocean incineration. EPA appears to be trying to issue ocean incineration permits while sampling and analysis methodology is still in the development phase, without appropriate methodology promulgated and in place.

C. Isokinetic Particulate Matter Sampling

EPA maintains that isokinetic sampling for particulate matter is not necessary to determine the emissions of organic compounds from the ocean incinerators, since these compounds will not be adsorbed on particulate matter at elevated temperatures. EPA has performed no testing during the ocean incineration program, however, to demonstrate the validity of this conclusion.

D. Teflon Sampling Lines

EPA has not satisfactorily demonstrated that the use of Teflon tubing connecting the sampling probe to the impinger/adsorber train does not affect the collection efficiency of PCB's and other organochlorides. One conclusion drawn in the TNO report on the December 1981 PCB burn states in part "...stack sampling for organochlorine compounds with a low volatility through a long heated PTFE sampling line seems to be unfeasible and certainly needs a careful study." The TRW report on the August 1982 PCB burn presents the results of a laboratory study conducted to determine whether or not significant losses of PCB's could occur in a Teflon transfer line, and concludes that there is not irreversible loss of PCB's in the heat-traced Teflon line. The TACB staff, however, examined the available data on this study and reached the conclusion that the test results indicate a need for EPA to examine this issue in more depth. The staff compared the PCB concentrations obtained from the paired glass and Teflon sampling trains operated at 120°C and 65°C and calculated the percent difference in PCB's collected in each pair of trains. The staff results show that the percent differences in the PCB concentrations between the Teflon and glass trains ranged from about -27% to +100%. The following table illustrates these findings:

	PCB Concentration		% Difference
Run	Teflon	Glass	(Teflon vs. Glass)
120°-1	0.096	0.048	+100
120°-2	0.067	0.066	+1.5
120°-3	0.063	0.068	-7.4
120°-4	0.250	0.325	-23.1
65°-1	0.142	0.092	+54.3
65°-2	0.109	0.149	-26.8
65°-3	0.095	*	*
65°-4	0.157	*	*

*No data available to calculate

From an examination of these percent differences obtained while sampling the same PCB stream with two different trains simultaneously, it must be concluded that the two trains are not equivalent. It should be noted from the table that on the first run at each temperature, more PCB's were recovered from the Teflon train than from the glass; however, as more runs were taken, the situation reversed and the glass train provided better recovery. This occurred at both 120°C and 65°C. The conclusion that the use of Teflon lines does not affect PCB collection efficiency cannot be justified with the results of this study; also, no data was presented to show the effect of Teflon on the collection of other organochlorides which might be found in the incinerator exhaust.

E. Reported Destruction Efficiencies

In the opinion of the TACB staff, the DE's reported by EPA for ocean incineration are not representative of actual incinerator performance. The calculation depends on the ability to measure accurately the emissions of pollutants from the incinerator. Because of the inadequacies discovered in the sampling programs as described in Sections A through D above, it is doubtful that pollutants can be measured accurately or that incinerator performance can be adequately characterized based on the existing data. While it is recognized that ocean incineration testing represents a challenge to the current state of source sampling technology, this should not be an excuse for failure to either adopt and follow existing testing and monitoring rules or develop and certify appropriate alternative methods specific for ocean incinerators.

Evaluation of Analyses of Ambient Air and Source Samples

The Laboratory Division of TACB reviewed the PCB and organochlorine compound analytical procedures which were used to analyze samples collected during various research burns. The following concerns were identified in the report of the ambient sampling done aboard the OSV Antelope during the August 1982 PCB research burn:

A. It does not appear that an effort was made to achieve the lowest possible detection limits with the analytical instrumentation. TACB calculations of the detection limits indicate that much lower detection limits could have been reached for the types of analyses performed. The detection limits were reported in units of ug/m^3, which are not indicative of the actual performance of the analytical instruments. The TACB converted those limits to units of ug/ul and pg/ul by assuming that the investigators followed the referenced EPA procedure and concentrated the samples to 1 ml. The resultant detection limits for the electron capture (EC) and mass spectrometer (MS) methods were found to be 240 pg/ul and 10 ug/ul, respectively. In the experience of the TACB Laboratory Division, detection limits of less than 100 pg/ul for EC and 3-5 ug/ul for MS should normally be achievable without a great deal of effort. Further, there was no indication in the report that MS detection limits were enhanced by using such options as multiple ion detection in the electron impact mode or the chemical ionization mode of detection. TACB experience has shown that if positive and negative chemical ionization modes of detection are used, the detection of individual PCB isomers can be enhanced possibly as much as 100 fold over the full scan electron impact mode of ionization. The report did not discuss the mode of ionization or the scan limits used in the MS technique.

B. The report attributes large numbers of electrophilic compounds found in the samples to either the ship's engines or to the incinerators. No samples of engine emissions were taken to determine which compounds may have been emitted by the engines.

C. Although the report states that no chlorinated organic compounds or PCB's were detected, the analysts did not perform the perchlorination step recommended in the EPA analysis method for situations in which an Arochlor pattern is not present or individual PCB isomers are not detected. The report indicated that an Electric Power Research Institute (EPRI) publication does not recommend perchlorination for analysis of combustion samples; however, this reference was not available to TACB reviewers and the report did not explain the basis for that recommendation. It should be noted that the samples under analysis were ambient samples and not taken directly from the combustion source. Since no organochlorides were detected using direct ECD injection, it would have been advisable to try perchlorination to convert any small quantities of individual PCB isomers to the fully saturated (deca) isomer to aid in determining if PCB's were present. Additionally, the EPA procedure suggests the use of a silica gel cleanup step, which was also not performed. If done prior to ECD analysis, the silica gel cleanup would have removed many of the electrophilic compounds which showed up in the analysis, making any Arochlor patterns or the retention time of an individual PCB easier to observe.

The analyses of source samples from the August 1982 Vulcanus PCB burn and from the February 1983 Vulcanus II burn were also reviewed. In general, both the analysis procedures and documentation were more rigorous for these source tests than for the ambient samples. Instrument detection was pushed to low levels by the analysts, and quality assurance and calibration procedures were adequate to demonstrate the validity of the analyses. During the analysis of the Vulcanus II samples, however, peaks appeared in the reconstructed GC/MS chromatograms which did not match retention times for the chlorinated organic compounds of interest. The report failed to address the identity or classification of these peaks.

Upon comparing and contrasting these three analytical reports, a number of general concerns can be outlined concerning the analysis of samples from ocean incineration:

A. Differences in procedures followed by various analysts for the various burns indicate a need for standard analytical procedures for both ambient and source samples from ocean incineration. For example, source test analysts pushed detection limits to the minimum level, while ambient analysts did not. Detection limits for the more dilute ambient samples should have at least approached, if not surpassed, those for the source samples. Further, the modification or elimination of certain referenced procedures by various analysts indicates a need for analysis techniques designed specifically for ocean incineration samples.

B. More emphasis should be placed on identification of unknown organic compounds emitted from at-sea incineration. Because the burns were for research, some effort should have been made to demonstrate not only that the compounds of interest were not emitted, but also that no other potentially harmful substances are created and/or emitted at significant levels during incineration.

C. Many of the concerns addressed in this section generate questions which should be addressed by EPA:

    1. Did all of the analysts have access to the instrumentation necessary to analyze the collected samples to the fullest extent possible?

    2. Was sufficient funding and time available to the analysts to enable a thorough and complete analysis of all samples?

    3. Were the analysts required to meet only specified detection limits, rather than encouraged to press for the lowest achievable detection limits in order to better satisfy public concerns over potential emissions?

Conclusions

1. If the incinerators in use on Vulcanus I and II were land-based, TACB Regulations would require an afterburner (plug flow reaction chamber) and a scrubber in addition to the existing incinerators in accordance with the application of best available control technology. EPA's decision to base ocean incineration permits on specified performance criteria did not provide for a hearing record that included feasibility and cost information on more conservative incinerator designs; accordingly, TACB is not able to comment on the reasonableness of applying control technology for land-based units to ocean incineration.

2. High-intensity burners combining pressure and steam atomization may be better suited to the combustion of various types of chemical waste than the existing rotary-cup system.

3. Improved temperature measurement systems should be installed in the incinerators, including multiple thermocouples at the outlet of the radiant zone to verify that the heat distribution is uniform and that the combustion temperature exceeds 1200°C.

4. Waste feed rate and combustion air flow rate should be monitored on a continuous basis and an air/fuel ratio controller should be used to ensure proper residence time and burner operation.

5. The incinerator stacks should either be modified to allow representative sampling and traversing to be conducted, or EPA should develop a test protocol for conclusively demonstrating that representative samples can be obtained at the existing locations.

6. EPA should develop and publish reference test methods for the measurement of organochlorine compounds including PCB's in waste incinerator effluents, describing in detail permissible sampling equipment, sampling procedures, absorbing reagents and dry adsorbers, and quality assurance procedures. The reference test methods should then be used for performance testing of ocean incineration facilities.

7. EPA should develop and publish continuous monitoring methods specific to ocean incineration, including monitor performance specifications and monitor performance test procedures.

8. Research, including actual isokinetic sampling, should be conducted to establish the need for including particulate matter testing of chemical waste incinerators as a necessary part of performance testing.

9. EPA should develop and publish laboratory analysis procedures specific to ocean incineration in order to standardize the analytical techniques for both source and ambient air samples.

10. EPA should investigate the identity of unidentified organic constituents of the incinerator effluent.

The TACB staff recognizes that the incineration of chemical wastes at sea can be a useful means of disposing of these materials when performed under carefully controlled and monitored circumstances; however, the staff believes that from the available information, it has not been conclusively demonstrated that the desired destruction efficiencies are achieved. It is therefore recommended that EPA fully address and resolve the issues raised in this paper before long-term permits are issued for at-sea incineration in the Gulf of Mexico.

STATEMENT OF KENNETH S. KAMLET, ON BEHALF OF THE NATIONAL WILDLIFE FEDERATION, AT HEARING ON "ISSUES CONCERNING INCINERATION OF HAZARDOUS SUBSTANCES AT SEA," BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION, COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, UNITED STATES SENATE, JUNE 19, 1985

Mr. Chairman, Senator Bentsen, and Members of the Subcommittee:

I am Kenneth S. Kamlet, Director of the National Wildlife Federation's Pollution and Toxic Substances Division. The National Wildlife Federation (NWF), on behalf of its over 4.5 million members and supporters and 52 state and territorial affiliates nationwide, has been involved actively since 1973 in efforts to safeguard the ocean environment from harmful pollution--particularly, ocean dumping of contaminated sewage sludges, dredge spoils, and industrial chemicals, and the discharge of municipal and industrial effluents through ocean outfalls.

Our marine protection efforts have been guided by three main principles:

-Persistent toxic wastes, to the extent they cannot be reduced or eliminated at the source or destroyed, should be isolated and contained; dispersal of such materials in the ocean (or other open water) environment is inappropriate and indefensible.

-Dispersal of wastes in the ocean is appropriate for only a limited range of biodegradable or otherwise readily assimilable materials, such as nutrients (under suitable conditions), acids, alkalis, and readily degradable organic matter.

-Because the ocean is a global commons not subject to private ownership or to normal marketplace protections, it is incumbent upon national governments to intervene and apply special safeguards to ensure that the world ocean is not exploited for the benefit of a few at the expense of all.

Background of NWF's Ocean Incineration Role

NWF has been involved in the issue of incineration at sea since 1974. In that year, learning that the incinerator ship Vulcanus was enroute to the U.S. from Europe to pick up and burn vinyl chloride wastes from the Shell Chemical Company's Deer Park, Texas facility, and that EPA had taken the legal position that neither the Clean Air Act nor the Ocean Dumping law applied to this activity (so that Shell was free to do what it wanted), we threatened to sue EPA unless the Agency reversed itself and asserted jurisdiction over the activity. The Agency did so, as announced in an unprecedented joint press release, issued on September 27, 1974, by EPA, Shell, and NWF. A public hearing ensued in Houston, Texas on October 4, 1974, followed on October 10th by a decision of the EPA Administrator. It authorized a closely supervised and monitored "research burn." Four Shell burns subsequently occurred in the Gulf of Mexico between October 20, 1974, and January 4, 1975.

NWF also played an active role in the deliberations leading to the incineration at sea of U.S. Air Force stockpiles of Agent Orange Herbicide between July and September of 1977 in the Pacific Ocean west of Johnston Island. A second series of Shell burns took place in the Gulf of Mexico between March and April of 1977. In a 1981 paper (appended as EXHIBIT 1), I discuss the results of these and other pre-1980 burns.*.

More recently, a series of PCB burns took place in the Gulf of Mexico between December 22, 1981, and August 31, 1982..

NWF did not participate directly in the November 21-23, 1983, EPA hearings in Brownsville, Texas and Mobile, Alabama on the request of Chemical Waste Management and Ocean Combustion Services for permits to use the vessels Vulcanus I and Vulcanis II in the Gulf of Mexico to burn a variety of compounds. These included up to 160 million gallons of "mixed liquid organic compounds" (the so-called "soup" permit) and 264,000 gallons of liquid DDT wastes. NWF did review the permit developed in connection with these hearings, and we prepared a statement for distribution at the hearings.

NWF's involvement in other key domestic and international developments relating to incineration at sea is summarized as follows:

1. We commented extensively on the Gulf of Mexico Draft Site Designation EIS issued in final form in July 1976.

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*The exhibit referred to has been retained in committee files.

2. We commented extensively on the EPA/Department of State October, 1978, Draft EIS "For the Incineration of Wastes at Sea Under the 1972 Ocean Dumping Convention."

3. We commented extensively on the October 1980 Draft EIS on the North Atlantic Incineration Site Designation.

4. We provided input to the January, 1981, Department of Defense EIS "For the Safe Collection, Transportation and Final Disposal of U.S. Department of Defense Stocks of DDT."

5. We participated on the Hazardous Waste Control Assessment Advisory Panel which assisted the Office of Technology Assessment in preparing its landmark, March, 1983, report on *Technologies and Management Strategies for Hazardous Waste Control*, which includes a discussion of incineration at sea (pp. 169-170).

6. We are a charter member of the EPA-State Department Advisory Committee on Ocean Dumping and played an active role in the deliberations of a Working Group convened by EPA following the First Consultative Meeting of London Dumping Convention Parties (Sept. 1976) to identify specific regulatory and technical provisions relating to ocean incineration for consideration by the LDC parties.

7. The Third LDC Consultative Meeting (in 1978) subsequently adopted amendments to the LDC concerning incineration at sea, including an Addendum to Annex I of the Convention, containing "Regulations for the Control of Incineration of Wastes and Other Matter at Sea." Technical Guidelines on Control of Incineration of Wastes and Other Matter at Sea were adopted at the Fourth

Consultative Meeting and refined at the Fifth Consultative Meeting. I represented NWF in these developments as a member of the U.S. delegation at LDC-IV and LDC-V in 1979 and 1980, and at an intersessional Ad Hoc Scientific Group Meeting in 1981.

8. NWF participated in the two Public Work Group meetings in mid-1984, which were convened to elicit public input on EPA's evolving draft ocean incineration regulations. (I append as EXHIBIT 2, a copy of a June 18, 1984, letter formalizing our views on several of the issues discussed at the June 26th work group meeting).

9. NWF has done an extensive legal analysis of LDC requirements, particularly as they relate to the burning of wastes containing mercury and cadmium compounds. A January 11, 1985, memorandum on these issues is appended as EXHIBIT 3.*

10. NWF's initial comments on EPA's proposed Ocean Incineration Regulations, as presented at the first of a series of EPA field hearings (held April 18, 1985, in West Long Branch, New Jersey), is attached as EXHIBIT 4.*

11. We have been working with The Keystone Center, a nonprofit organization engaged in consensus-building meetings on hazardous waste issues, to organize a workshop on key ocean incineration issues among various of the key participants in this controversy. Although some of the details have yet to be completed, this workshop should take place at the end of June.

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*These exhibits have been retained in committee files.

12. I append as EXHIBITS 5* and 6,* copies of two items reflecting NWF's position on incineration at sea--a May 1, 1985, letter-to-the-editor of The New York Times, and a June 1984 position paper which appeared in The Environmental Forum (Vol. 3, No. 2; published by the Environmental Law Institute).

13. Finally, I append as EXHIBIT 7,* a copy of a presentation made at the Virginia Institute of Marine Sciences on February 11, 1985.

NWF's Position on Key Issues Relating to Incineration at Sea

The Subcommittee's invitation letter of May 28th poses a long list of "Ocean Incineration Issues" (in a 4-page attachment), representing "an outline of themes the Subcommittee will be pursuing" and designed to "serve as basis for questions." We have attempted to respond to each of these detailed questions in a separate attachment (EXHIBIT 8).

For purposes of the present testimony, I will focus on the issues identified in the body of the invitation letter--specifically: (1) the adequacy of EPA's proposed regulations in terms of providing appropriate public health and environmental safeguards; (2) the efficacy of ocean incineration technology compared to other existing and emerging waste destruction techniques; (3) the effect of adopting large scale ocean incineration on efforts to promote waste minimization; and (4) why NWF has placed confidence in the use of this technology despite heavy criticism of EPA's rulemaking efforts.

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*These exhibits have been retained in committee files.

Adequacy of EPA's Proposed Regulations

The deficiencies we have so far identified in EPA's proposed regulations are summarized in EXHIBITS 3* and 4.* In general, these are matters of fine-tuning and adjustment which lend themselves to rectification by EPA in its final regulations and should not serve as significant impediments to proceeding with commercial-scale ocean incineration.

However, there are a handful of issues which may lend themselves less readily to appropriate resolution--either because of perceived or actual limits on the scope of EPA's authority, or because primary legal jurisdiction is vested in other Federal agencies (i.e., with resulting limits on EPA's ability to regulate under another agency's statutory purview). Following are some examples:

1. Suitability of particular loading ports--This would fall in the primary purview of states (with established Coastal Zone Management Plans) and the Department of Commerce (Office of Coastal Zone Management, within the National Oceanic and Atmospheric Administration). Under the Coastal Zone Management Act (CZMA), states may bar certain activities from occuring within their "coastal zones" where they determine that these activities would be "inconsistent with" the goals and limitations of their approved Coastal Zone Management Plans. An inconsistency determination by a state can

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*Retained in committee files.

be appealed to the Secretary of Commerce.

It would be desirable, in the context of a comprehensive program to regulate incineration at sea, to conduct a detailed assessment of suitability and unsuitability of potential ports of origin--in terms not only of how well equipped they are to load hazardous liquid cargoes safely, but also in terms of the need to traverse highly productive or fragile estuarine (and other) areas in travelling from a particular port to the designated incineration site. Ideally, traverses through fragile areas could be prohibited or limited, with certain potential loading ports declared unsuitable and precluded from consideration--at the same time ensuring, however, that one or more acceptable loading ports and transit routes remained available to afford reasonable access to a given "burn" site. While the legal authority to do this could be pieced together if the state governments in a region were willing to join forces with EPA and the Department of Commerce and utilize their collective authorities for this purpose, this seems unlikely to happen under the current legal regime.

2. Ceiling on Maximum Inputs to a Given Ocean Area--For geographically circumscribed ocean areas (in the U.S., most notably the Gulf of Mexico), where biological productivity is high and waste assimilative capacity is (comparatively) low, it might well make sense and be desirable to establish an upper limit on the number of shiploads of wastes (or on the maximum level of

mass emissions of persistent unburned residues) that would be allowed to be burned in that area in a given year. (This may become more important in the future as the number of operational incinerator ships increases). Determining the level at which such a "cap" should be set is a complicated matter. This could be done (at least for Clean Water Act "priority pollutants" for which water quality criteria have been established) by use of the sorts of models encompassed in EPA's proposed regulations, based on maximum loadings consistent with not exceeding marine water quality criteria (using worst-case assumptions). This could be accomplished through a condition on the right to use a designated ocean incineration site, as an element of EPA's site management responsibilities (and authorities).

3. Spill Prevention, Shore-Based Facilities, and Related Handling and Safety Considerations--

These are matters within the legal jurisdiction of the U.S. Coast Guard. The concern is that existing Coast Guard regulations were designed primarily with the problem of oil spills in mind and the regulations may not be responsive to the environmental protection and safety needs presented by the handling of hazardous chemicals.

4. Financial Responsibility (Liability Insurance) Requirements--

We support the need to require ocean incineration entrepreneurs to guarantee the ability to devote the resources necessary to respond to environmental releases or accidents, or to cover claims which may be made against them based upon such releases. One underlying problem is that EPA does not have the explicit legal authority under the present Ocean Dumping Law to impose any financial responsibility requirements at all.

In other respects (subject to limited, but important, fine-tuning), we would regard the proposed regulations as adequately and appropriately protective of public health and the environment. Indeed, in most ways, they afford more safeguards and protections than do either the London Dumping Convention or U.S. controls on land-based incinerators under the Resource Conservation and Recovery Act.

Merits of Ocean Incineration Versus Other Existing and Emerging Destruction Technologies

As between incineration on land and incineration at sea, we don't believe it can be categorically said that one or the other is universally preferable. They each have their pros and cons. For example, incinerator ships don't generate large volumes of effluents and sludges, but may provide a fractionally increased risk of a limited marine spill. In both cases, the risk of land-based transport accidents is a direct function of distance transported.

If all other factors were equal, the risk of a transportation accident would be a function of how close to the waste generator a suitable high-temperature commercial incinerator could be found with the capacity to receive these wastes. Clearly, land-based incinerators won't always be closer to the manufacturing facilities generating the wastes to be burned than incinerator ship loading ports.

The important point is that the destruction of highly persistent hazardous waste -- whether on land or at sea -- is preferable to disposal-oriented approaches which do nothing to lessen the environmental hazards posed by these wastes. It is a fact that the majority of the more than a quarter of a billion tons of hazardous waste generated in this country every year is disposed of by questionable methods: injection in underground wells, disposal in surface impoundments (pits, ponds and lagoons), and dumping in landfills.

This is not to say that new and better destruction technologies (e.g., chemical and microbiological treatment) won't be developed and become available on a commercial scale. They are not here yet and we cannot afford to sit back and await their arrival.

Incineration, whether on land or at sea, is not perfect. It is the best commercially available technology available now for getting rid of thermally degradable liquid organic hazardous waste.

Impacts on Efforts to Promote Waste Minimization

One of the arguments against ocean incineration is that the availability of this outlet for destruction of hazardous waste will somehow discourage waste generators from taking steps to reduce their output of hazardous waste in the first place. Ocean incineration, while usually somewhat less expensive than incineration on land, is still dramatically more costly than most widely used land-based disposal methods. As legal restrictions and public opprobrium increasingly force waste generators away form land disposal to more costly incineration technologies, these generators are not going to feel an incentive to produce any more wastes which have to be funneled into expensive incinerators.

Rather than being an impediment to source reduction, incineration at sea will provide added encouragement to avoid costly treatment by cutting back on waste production. Conversely, preventing ocean incineration from going forward will not halt waste generation. It will insure that underground injection and other undesirable disposal practices will continue to be favored waste "management" techniques.

Why NWF Is More Willing Than Others to Place Confidence in Ocean Incineration

NWF has made a pragmatic judgment, based on the desire to minimize the environmental risks posed by hazardous waste to the environment as a whole. No one can deny that it is better to destroy hazardous wastes than it is to discard them without treatment.

The prospect of a catastrophic spill of an incinerator ship's cargo is a sobering consideration. However, dangerous chemical cargoes already move freely through our coastal and inland waters.

Ocean incineration is a decisive and effective way to destroy--utterly and safely--toxic chemicals that should be kept out of the environment. We certainly don't know all the answers to the questions ocean incineration may raise. We do know nearly all of the answers to the important questions; certainly we know enough to make a decision to move ahead.

The ocean incineration issue is certainly not unique in raising the question of where to draw the line between the need for more study and the need to act. NWF's position is consistent. Just as we have condemned the Administration for its more-research, no-action stance on acid rain, we are unwilling to see the advent of ocean incineration postponed on the grounds that more information is required.

We should do everything we can to make ocean incineration as safe and effective as possible. It is a process that works and can be used--now--to help solve one of this Nation's most troublesome environmental problems. It is an idea whose time has come. I suggest we move ahead. It can be done safely and effectively, if only we have the will to do it. Further debate, condemnation, research, postponement and continuing prohibition awaiting the evolution of perfection is neither necessary nor wise. Ocean incineration is an option that is available now. We must take advantage of it now.

ATTACHMENT 8

Comments on Issues Raised by the Environmental Pollution Subcommittee

I. Use of Ocean Incineration (O.I.) to Dispose of Hazardous Waste (H.W.)

A. Risks and benefits of utilizing O.I. in comparison with other H.W. disposal methods.

Comment: Incineration, whether on land or at sea, is clearly preferable to the environmentally unsound disposal practices now being used for the vast majority (around 70%) of hazardous wastes (i.e., underground injection, surface impoundments, and landfilling). Obviously, it is far better to destroy persistent, toxic wastes than to simply move them around in the environment.

While there may be better techniques in the offing--e.g., chemical and microbiological destruction methods--these are unlikely to be widely available on a commercial scale for many years. When and if they arrive, they may appropriately supplant obsolete thermal destruction methods.

As between land- and sea-based incineration, they each have their advantages and disadvantages. Land incinerators avoid the risk of catastrophic releases in sensitive marine waters and require stack scrubbers to remove acid emissions (and may incidentally remove small amounts of more toxic emissions), but they generate scrubber effluents and sludges which may contaminate the environment and which may divert scarce solid waste landfill capacity. They also tend to be located in direct proximity to major population centers, and public opposition makes it very difficult to site new facilities. Sea-based incinerators take advantage of the ocean's considerable buffering capacity to avoid the need for scrubbers and to eliminate the production of troublesome sludges and effluents. They also operate far from shore and population centers, minimizing the risk to human health (although with a potentially greater risk to the environment). To the extent O.I. can occur less expensively than incineration on land, it may be more effective in enticing waste disposers away from cheap and ineffective disposal practices than is more costly land incineration.

B. Effect of utilizing O.I. as part of a national waste management strategy and potential conflict with efforts to promote waste minimization and encourage alternative technologies.

Comment: Eliminating O.I. as an option would probably provide more impetus to illegal dumping than it would to waste minimization and alternative technologies. The 1984 RCRA amendments (making many forms of land disposal illegal) will provide all the necessary incentive to minimize expensive-to-manage wastestreams and to look for more acceptable alternatives. You can't shut off all options at once. And, for already generated wastes (e.g., PCBs and banned pesticides), waste minimization is obviously no longer an option.

C. Policy implications of sanctioning major waste disposal facilities and sites in a few selected areas versus promoting State and regional waste management.

Comment: The two are not mutually exclusive and both approaches should be pursued. The practical difficulty of successfully siting new hazardous waste management facilities on land, makes it inappropriate and counterproductive to excessively impede the advent of O.I.

II. Regulations Proposed by the Environmental Protection Agency (EPA)

A. Sequence of past and present rulemaking efforts including, designation of the Gulf of Mexico site in the absence of specific ocean incineration site criteria; use and applicability of prior research burn data in developing proposed regulations; proposal to grant operational permits in 1983 absent final permitting rules; [and] proposal of regulations in February, 1985 prior to completion of EPA-initiated studies.

Comment: It is unfortunate that EPA waited as long as it has to begin promulgating formal ocean incineration regulations, and it was imprudent if not unlawful of EPA to propose to grant operational permits for O.I. in the Gulf of Mexico in 1983 in the absence of final permitting rules. However, the designation of the Gulf of Mexico incineration site in the absence of specific ocean incineration site criteria is less troublesome. This is because the site designation criteria under the MPRSA, the Ocean Dumping regulations, and the London Dumping Convention do not differ significantly from the O.I. criteria as currently proposed. Indeed, the Site Designation EIS in support of the Gulf Coast site reflects one of the best site evaluations EPA has conducted on any ocean disposal site. EPA has, generally, made good use of prior research burn data in formulating O.I. permit conditions and in developing the current proposed regulations. The proposal of O.I. regulations in February, 1985, prior to completion of EPA-initiated studies (i.e., the OPPE study, the SAB report), while not the optimum way to proceed, is perfectly understandable. In its belated efforts to respond to public and congressional concern that the adoption of comprehensive O.I. regulations had been unreasonably delayed and that operational O.I. permits should not be issued until such regulations were in place, EPA undertook to promulgate these regulations on an expedited basis. It also appropriately initiated several internal analyses, which it committed to take into account prior to finalizing the O.I. regulations, but only after they had been subject to public review and comment. Consistent with this commitment, the results of these analyses were made available for public review and comment prior to the field hearings held by EPA around the country. Indeed, EPA extended the public comment period on the proposed regulations by a month, expressly to allow additional time for review and comment on the OPPE and SAB reports.

B. General adequacy, scope, coverage and content of regulations proposed in February, 1985:

1. Need Determination--Adequacy of proposal to develop a generic determination of the need for ocean incineration to satisfy requirements of the LDC and MPRSA including evaluation of alternative disposal methods; EPA position on consideration of land-based disposal capacity; and proposed revision of need determination every five years.

Comment: The statement in the preamble to the proposed O.I. regulation (p. 8247) which regards need as presumptively demonstrated if ocean incineration poses less or no greater risks than practicable land-based alternatives inappropriately strays from the LDC definition. EPA should modify its proposal to more closely track the LDC definition--i.e., as a function of the "practical availability of environmentally better land-based methods of treatment, disposal or elimination". EPA should do three other things, as well: (a) Explicitly adopt within the regulation a "hierarchy" of more or less preferred hazardous waste options (ranging from waste minimization to waste disposal and dispersal), paralleling the approach of the 1984 RCRA amendments and reflecting the recommendations of the Office of Technology Assessment and the National Academy of Sciences. In assessing "need" for O.I., both generically and on a permit-specific basis, EPA should require the exploration and assessment of all alternatives positioned higher on the hierarchy (in terms of total or partial implementability), as well as consideration of other treatment and destruction technologies. (b) A generic (nationwide and regional) "needs" assessment should be made by EPA no less frequently than every five years. (c) Ocean incineration permit applicants should also be required, as part of their permit application, to make their own site-specific evaluation of need--based on the geographic area they propose to service and on information supplied by their customers. In this regard, EPA should track the parallel requirements imposed on direct ocean-dumpers (including barge operators who obtain ocean dumping permits on behalf of numerous customers), as contained in 40 C.F.R. §§ 221.1(j), 227.15, and 227.16. Specifically, EPA should consider not only relative environmental risks, but also comparative impacts and costs. And O.I. operators should be required to press their customers to demonstrate and certify that they have adequately evaluated and rejected as infeasible other potentially less risky management techniques, including waste minimization.

2. Site Designation and Management Proposal--Potential use of non-designated sites in conjunction with permitted research burn or emergency permits; adequacy of methods for determining carrying capacity for proposed designated sites; opportunity for public participation in site designation or revocation process; adequacy of "designation study" criteria and monitoring requirements; propriety of a ten-year site designation; propriety of continuing the Gulf of Mexico site designation without conducting proposed procedures for designating new sites.

Comment: Ocean incineration permits should be available only for burns within formally designated O.I. Sites. To the extent a departure from this is occasionally warranted in the case of "emergency" or "research" permits, burning outside of finally designated sites should be strictly limited to sites which have at least gone through the proposed designation-Draft EIS stage of the process. Proposed § 234.77(c)(1) requires O.I. site designation studies to "include a calculation of the site's carrying capacity for acid-forming emissions, organic constituents and metal particulates emitted after incineration." Proposed § 234.78(a)(3) requires site designations to include "limits on the type and quantity of materials that may be in the incineration emissions, based on the carrying capacity of the site for these emissions." And proposed § 234.79(a) requires regulation of the use of an incineration site [to] be on a permit-by-permit basis by establishing limits on the times and rate of incineration so as to not exceed the carrying capacity of the site for substances emitted from the incineration process." The preamble explains (p. 8255) that the Agency proposes to regulate the use of an ocean incineration site in two ways: on a permit-by-permit basis, [by] establishing limits on the time and rate of incineration based on the carrying capacity of the site for the substances emitted; and through the implementation of an environmental monitoring program, included in each site designation rule. The proposal is silent, however, as to the precise means by which a site's carrying capacity is to be determined, and no definition of "carrying capacity" is provided. The intent, presumably, was that the "Model Used to Derive Allowable Concentrations of Organochlorines and Metals in Wastes for Incineration-at-Sea," as contained and explained in Appendix A (primarily for purposes of demonstrating compliance with the "environmental performance standards" prescribed in proposed § 234.48), be used (considering the aggregate O.I. emissions during the total site designation period) in computing an overall carrying capacity for the site. (If so, this should be stated explicitly. There should also be provided a method for computing carrying capacity for acidic emissions, since none is expressly provided in the proposed regulations.) The Appendix A model, unfortunately, is confusing and difficult to apply, and may well not have been adequately verified in the field. The proposed designation study criteria and monitoring requirements seem adequate and appropriate. Although we feel strongly that the duration of operational permits should be no greater (at least initially) than five years, we have no objection to designating ocean burn sites for ten-year intervals--as long as regular monitoring is carried out to detect problems as they occur, and as long as EPA retains the authority and the mandate to revoke or modify a site designation at any time based on evidence of undue impacts. The opportunity for public participation in the site designation or revocation process seems adequate. Such an opportunity is afforded at the time of proposed and final site designation (as noticedin the Federal Register), and when proposed and final site designation EIS's are issued. Finally, we see no impropriety in continuing the Gulf of Mexico site designation without applying the new site designation procedures, given the similarity of the old and the proposed new procedures. We do, however, believe that a detailed "carrying capacity" assessment be made for the Gulf of Mexico site, followed by any needed adjustment in the site designation rule for this site. In particular, we believe, given the semi-enclosed status of the Gulf, and the high productivity of its coastal waters, that the site designation rule should contain an express limit on the maximum number of total "burns" (or of wastes transported for O.I.) that may be allowed in any year at the Gulf burn site.

3. Permit Requirements--Adequacy of conditions applied to the three proposed permit categories and proposed consolidation of trial burn and operational permit processes; need versus efficiency of eliminating the adjudicatory hearing and Hearing Officer Reports from the permitting process; adequacy of proposed ten-year duration of permit; need for review of permit applicants' compliance history; adequacy and scope of liability and insurance proposals; adequacy of permit enforcement proposals including the "ship rider" concept; and adequacy of the proposed applicant fee to defray permitting costs.

Comment: As previously noted, we believe O.I. permits should be available only for burns within formally designated sites (or, in the case of "emergency" or "research" permits, at sites which have at least gone through the proposed designation and draft site designation EIS process). In addition, research permits should not only be limited to no more than six months in duration, but should also be limited in terms of the maximum load of waste permitted to be burned under such a permit. No more than a fraction of an incinerator ship's full capacity should ever be utilized for burning under a research permit. We do not object to the concept of a consolidated trial burn and operational permit process. A formal adjudicatory hearing makes sense when it is proposed to revoke an O.I. permit (either on EPA's own initiative, or at the urging of a private party). An ordinary rulemaking proceeding may suffice for challenging the issuance or renewal of permits--at least if the permit term is five years or less. (The longer the permit term, the greater the need for a special mechanism for forcing intervening review). Where a less formal permit hearing is held, the hearing officer should be required to furnish a report or decision memorandum to the Administrator (or Regional Administrator), documenting the grant or denial of an applicant's permit request. This information will facilitate and simplify subsequent judicial review, if any, and it will help reassure citizen objectors that their concerns have, in fact, been addressed and taken to heart. A ten-year permit term is too long; five years is the maximum that should be authorized--at least until EPA acquires more operating experience with the O.I. program. An applicant seeking formal renewal of its permit has the clear burden to demonstrate its eligibility and to respond to EPA or public criticisms about its past performance. In contrast, under the proposed ten-year permit term, with opportunity for review after five years, the burden would fall on EPA to demonstrate "inadequate performance", lack of continued need, or "unacceptable human health or environmental impacts", before modification of the permit term could be considered. With so few commercial incinerator operators, minimizing red tape or paperwork seems a faint justification for further undermining public confidence. Although an applicant's relevant background, history, and experience should be required to be fully disclosed as part of the O.I. permitting process, this information should not be used by EPA as a basis for deciding whether a permit should be granted. Such information would put old, established companies with existing track records at an unfair disadvantage relative to new companies (with little or no experience in waste management) who may have no greater integrity or likelihood of meeting their legal responsibilities than existing firms. On the adequacy and scope of liability and insurance proposals, please see my letter of July 8, 1985, to Senator Bentsen (response to Senator Bentsen's second question). The proposed approaches to permit enforcement, including the "ship rider" concept seem adequate. However, proposed § 234.62(b) should be modified to make clear the shiprider's authority to stop the flow of waste, not only when he believes an unreasonable risk "is about to occur," but also when he believes that environmental contamination is occurring which may result in unreasonable "present or future" risk to health or the environment. The same concept should be reflected in §§ 234.67 and 234.70, dealing with "emergency suspension." Finally, the proposed permit processing fees of $1,000 and $4,000 (§ 234.24) seem ludicrously low in relation to EPA's obviously far-higher processing costs (and also in relation to the applicant's far-greater profit potential). Consideration should be given to significantly raising this fee to reflect actual processing costs.

4. Technical Issues--Application of land-based incinerator combustion and destruction efficiency standards to incineration vessels without requisite pollution control technology for land-based incinerators. Distinctions between land-based and ship-mounted incinerators in selecting appropriate monitoring and sampling techniques; sufficiency of studies documenting short- and long-term effects of incineration on marine habitats including evaluation of bioaccumulation of products of incomplete combustion and evaluation of microlayer effects.

Comment: Land-based incinerators, which are equipped with stack scrubbers, are subject to a "destruction-reduction efficiency" requirement ("DRE"), which reflects a combination of destruction and removal (by adsorption to the scrubber) of the introduced waste material. Ship-board incinerators, which generally lack stack scrubbers, are subject to a straight "destruction efficiency" ("DE") requirement. From an environmental standpoint, the important thing is what comes out of the stack. Ship-mounted incinerators have the demonstrated capability of achieving destruction and combustion efficiencies at least equal to those of land-based incinerators (and without producing contaminated scrubber sludges and effluents which require disposal). One major distinction between ship-board and land-based incinerators is that the former tend to operate at higher temperatures (to compensate for shorter dwell times), which makes stack sampling somewhat more complicated. In terms of monitoring, the injection of stack emissions into the ocean, following their dispersal in the atmosphere, makes it necessary to predict and follow the behavior of emission plumes in two, rather than one, dynamic media. Both on land and at sea, incinerator regulation has emphasized the minimization of unburned residues. In neither medium have products of incomplete combustion been fully characterized or tracked in terms of their ultimate fates and effects in the environment. Given the low levels of release involved, such tracking would be exceedingly difficult. Microlayer effects of combustion products, whether derived from land- or sea-based burning, await full characterization and evaluation. Given the low level of releases involved, it seems unlikely, however, that significant environmental build-ups will be found, or significant impacts projected.

III. Location of Base Ports

A. Legal mechanisms available to states and localities in selection of base port facilities, including application of Coastal Zone Management Provisions to veto a port designation.

Comment: Under the CZMA, states with approved Coastal Zone Management Plans can veto a port designation as inconsistent with an applicable CZM plan (this veto is subject to override by the Secretary of Commerce). No affirmative mechanism exists, however, for identifying and selecting suitable or preferred ports.

B. Opportunities for public participation in the port selection and access route selection process.

Comment: Absent state-level mechanisms (e.g., under CZMA program or state facility siting program), the only opportunity for public participation in port or access route selection would come during the public comment and public hearing phase of the process for issuing ocean incineration permits. Even then, it is far from clear that EPA could lawfully deny a permit based upon base port or access route unsuitability--unless some other entity with legal jurisdiction over such matters (e.g., the port state or the U.S. Coast Guard) were to make such a recommendation to EPA.

IV. Scope and Coverage of Existing Statutes and International Agreements

A. Applicability of provisions in current law to address ocean incineration; need for clarifying amendments to extend provisions of current law to ocean incineration; need for legislation to cover gaps in existing law; conflicts in provisions of current law when applied to ocean incineration; conformity of proposed EPA regulations with current law and international agreements.

1. Liability Provisions--Clean Water Act; Limitation of Ship Owner's Liability Act (LOSLA); CERCLA.

Comment: The Clean Water Act (§ 311(p)(1)) requires vessels which use U.S. ports to provide evidence of financial responsibility of the lesser of $100 per gross ton, or $14 million. LOSLA normally limits recovery to the maximum value of a ship and its cargo, but this limit is inapplicable where another statute sets a higher limit or where the damage caused is the result of negligence. CERCLA requires vessels that carry hazardous substances as cargo to carry liability coverage of $5 million or $300 per ton, whichever is greater (§ 108(a)). EPA's legal authority to specify liability requirements unique to incinerator ships is debatable and may require congressional resolution.

2. Waste Handling and Management Provisions--TSCA; RCRA; Hazardous Materials Transportation Act.

Comment: TSCA governs PCB destruction requirements. RCRA defines requirements applicable to land-based incinerators and to manifesting of hazardous wastes. HMTA governs the design of containers, if any, used in transporting hazardous substances, and placarding requirements.

3. Marine Protection Provisions--MPRSA; Endangered Species Act.

Comment: The MPRSA, inter alia, provides for the designation of marine sanctuaries (Title III) within which activities incompatible with sanctuary purposes are proscribed. It also authorizes the Administrator to specify sites and times at which ocean disposal may not occur and it gives the EPA Administrator broad authority to manage the ongoing use of ocean disposal sites. The Endangered Species Act precludes activities which may jeopardize an endangered or threatened species or its critical habitat and requires a biological opinion to be sought and obtained from the National Marine Fisheries Service (or the U.S. Fish and Wildlife Service) on the "jeopardy" issue. EPA's proposed O.I. regulations should reference these authorities.

4. Port Designation Provisions--Coastal Zone Management Act.

Comment: The CZMA authorizes coastal states to prepare Coastal Zone Management Plans. Upon the approval of these plans by the Secretary of Commerce, states may preclude activities in or affecting their coastal zones based on inconsistency with these plans. This inconsistency determination can be overridden by the Secretary of Commerce. This authority ensures that states can block the location of O.I. loading ports in places it deems unsuitable. It does not, however, ensure that such loading ports will be affirmatively located in the best possible location. (Indeed, it opens the possibility that all potential loading ports could be blocked seriatum on inconsistency grounds.)

5. London Dumping Convention--Adequacy of proposed regulations and existing laws to comply with the LDC

Comment: Existing laws seem adequate to comply with the LDC. The proposed regulations, however, should be modified or clarified in at least two respects to ensure full LDC conformity. (The MPRSA § 102(a) requires full adherence to the "standards and criteria" of the LDC.) First, the proposal can be read to allow both atmospheric dispersion and blending of wastestreams as means of rendering mercury- and cadmium-containing wastes acceptable for incineration at sea. The Convention permits neither. Second, the proposal's definition of "need" fails to precisely track that established under the LDC. Both of these deficiencies can (and, hopefully, will) be readily remedied.

6. Provisions in Federal laws that could conflict [with] or override State laws and local ordinances in determining location of base port facilities.

Comment: I am aware of no such provisions (other than the Commerce Secretary's override authority under the CZMA). To the contrary, both under the state's authority to make inconsistency determinations under the CZMA, and under the plenary authority of states to regulate the siting of hazardous waste management facilities, the dominant authority in this regard resides at the state level.

V. Government Roles in Ocean Incineration

A. Role, jurisdiction and respective responsibilities of Federal agencies with regard to ocean incineration activities; adequacy of existing regulations; need for new or amended regulations; adequacy of, or need for, coordinating regulatory components to develop a cohesive ocean incineration strategy and unified regulatory schedule.

1. EPA--role as regulator of site and permitting activities.

Comment: EPA clearly has the lead Federal role on O.I. activities once the ship leaves port. It is assumed (without perhaps, being totally clear) that EPA must defer to the U.S. Coast

Guard and others on matters relating to shore-based activities (i.e., loading and other handling operations in port; selection of loading port; selection of transit route from loading port to O.I. site).

2. EPA Science Advisory Board (SAB)--scientific consulting panel intended to provide independent analysis of technical issues related to EPA regulatory efforts; incorporation of SAB review of ocean incineration into proposed regulations.

Comment: The SAB has no explicit role under the MPRSA. However, EPA has committed to taking the SAB incineration committee's report and recommendations into account in developing final O.I. regulations.

3. Maritime Administration--criteria and procedures for granting loan guarantees; propriety of guaranteeing loans for the construction of incineration vessels prior to EPA's proposal of regulations signifying the Agency's intent to permit ocean incineration on a permanent basis.

Comment: There is a basic question as to whether MarAd should be providing loan guarantees at all to support and subsidize the construction of maritime vessels at a time when the supply of existing vessels greatly exceeds the demand for such vessels. However, given the existence of such a program, we see nothing wrong with MarAd's seeking to promote the construction of incinerator ships which, by all indications, would serve a public need (destruction of hazardous wastes) as well as commercial interests. EPA's long delay in promulgating proposed O.I. regulations is unfortunate. However, MarAd cannot be faulted for acting at a time when O.I. had received international sanction under the LDC and had been in use in the U.S. (under research and interim permits) for nearly a decade.

4. Coast Guard--vessel design standards, port management, supervision of vessel loading procedures.

Comment: Coast Guard vessel design standards are based on International Maritime Agency requirements for bulk chemical carriers and seem to be adequate for O.I. vessels. More attention, however, needs to be given to comparative design approaches of competing O.I. firms, with a view to maximizing the safety of the operation (i.e., there needs to be a mechanism to ensure that the comparative merits of the intermodal container approach versus transfer of bulk liquids to onboard storage tanks, of self-propelled incinerator ships versus tug-towed barges, and of horizontal versus vertical incinerator stack designs, are all fully examined). In the areas of port management and vessel loading, the Coast Guard's dominant interest is in preventing and cleaning up spills (primarily from a safety standpoint), with heavy emphasis on oil rather than hazardous chemicals. It is not clear (to us, at least) that the Coast Guard's existing regulations (and perhaps in some cases its underlying authority) are comprehensive enough, or appropriately structured, to fully or adequately address the complexities of hazardous chemical storage, transfer, and handling at O.I. loading ports

5. Hazardous Materials Transportation Board--transport of wastes to port.

Comment: The HMTB treats hazardous waste transportation the same as transport of other hazardous materials. Its procedures (and other DOT procedures) are sometimes criticized as unduly permissive and unequal to the challenge of modern-day movements of hazardous chemicals.

6. Occupational Safety and Health Administration--protection of dock workers and vessel crews.

Comment: We are not sufficiently familiar with the OSHA program.

7. National Oceanic and Atmospheric Administration--participation in the site selection and monitoring process.

Comment: Although NOAA has clear research and monitoring authority and responsibility under Title II of the MPRSA, it is our impression that NOAA has tended to unduly defer to EPA's desires and priorities and that its marine research budget has tended to be chronically malnourished.

VI. Gulf of Mexico Site Issues

A. Comparative criteria used in the original site designation and that proposed for new site designations; propriety of grandfathering in current designation without the benefit of public participation procedures available in new site designation proceedings.

Comment: We regard the two sets of site designation criteria as basically comparable and, therefore, see no need to reinitiate the site designation process for the Gulf of Mexicp site. We also believe that the opportunity provided for public review and comment, at the draft and final site designation EIS and at the proposed and final site designation rulemaking stages, was adequate and ample. We do believe, however, that EPA should reassess the suitability of the Gulf site after five or more years of operational use, with any supplemental site assessment appropriately addressing or revisiting such issues as: the generic "need" for ocean incineration within the area to be serviced by the Gulf burn site; the effect on this need if a second site were designated off the South Atlantic coast; and the possibility of imposing a "cap" on the maximum number of "burn" events permitted to occur in any year within the Gulf of Mexico.

B. Potential number and location of Gulf Coast base ports to serve the Gulf site, if used to maximum capacity, including estimates of the number of ships that would be loading at each port.

Comment: We have no specific information on these issues. However, there are three or four existing incinerator ships--two operated by Waste Management, Inc. (although the company has indicated that only the Vulcanus II will operate in U.S. waters), and two operated by At-Sea Incineration, Inc. (the second At-Sea vessel may not yet have been launched, however). In addition, two other companies--Seaburn and Environmental Oceanic Services--have O.I. vessels under design, but not construction (presumably, one vessel apiece). The preamble to EPA's proposed O.I. regulations notes (p. 8226): "Even if all [six of the present or proposed] incinerator ships were to operate in the Gulf, which is highly unlikely, the volume of hazardous substances transported in the Gulf would increase by only 0.05 percent. If petroleum were excluded from the total of hazardous substances currently transported in the Gulf, the increase in volume would be 0.11 percent."

C. Adequacy of EPA and State Department efforts to consult with the government of Mexico in designating the Gulf site; efforts to work with the government of Mexico to inform citizens of the Gulf Coast of Mexico of the site designation and purpose; adequacy of efforts to address citizen concerns; and possibility of siting base port facilities in Mexico to serve the designated site.

Comment: We are not familiar with the U.S. Government's ongoing efforts, if any, to consult or work with the government of Mexico in connection with the designation of the Gulf burn site. We are aware that a draft Mexican resolution on incineration was presented to the Third Intergovernmental Meeting of the Action Plan of the Caribbean Environment Plan in Cancun, April 24-26, and that this resolution proposed to refuse to allow "the burning of dangerous waste and toxic substances in the waters of the Greater Caribbean Sea." However, we are also aware that, as a result of negotiations in Cancun, the final resolution adopted by the meeting (UNEP/IG.55/CRP.7) merely opposes "any incineration of hazardous wastes and toxic substances in the Wider Caribbean which does not conform to international standards for the protection of the marine environment," and urges "the countries and territories of the Wider Caribbean Region to observe the provisions of international agreements on carriage, handling and disposal of hazardous wastes and toxic substances at sea."

NATIONAL WILDLIFE FEDERATION

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July 8, 1985

The Honorable Lloyd Bentsen
Ranking Minority Member
Committee on Environment and Public Works
SD-410
United States Senate
Washington, D.C. 20510

Re: Responses to Questions Posed by Members of the Environmental Pollution Subcommittee, Following Hearing on Ocean Incineration, June 19, 1985

Dear Senator Bentsen:

Following are my responses to the questions posed by yourself and Senator Lautenberg to follow-up on issues raised at the June 19th hearing on ocean incineration:

Senator Bentsen's Questions

Question 1. Do you believe that the designated burn site in the Gulf of Mexico is appropriately grandfathered under the proposed ocean incineration regulations?

Response. Yes. The site designation EIS prepared by EPA in support of the designation of the Gulf of Mexico "burn" site is one of the most thorough site designation EISs prepared by EPA. All of the designation criteria proposed for inclusion in the new regulations have been adequately addressed in the existing EIS. It may be appropriate, however, for EPA to reassess the suitability of the Gulf site after five or more years of operational use. Any supplemental site designation EIS or site assessment could and should revisit such issues as the generic "need" for ocean incineration within the area to be serviced by the Gulf of Mexico site, the effect on the need for the Gulf site if a site were designated off the South Atlantic coast, and the possibility of imposing a "cap" on the maximum number of "burn" events permitted to occur in any year within the Gulf of Mexico.

Question 2. As you noted in your statement, EPA does not have explicit authority under the MPRSA to set liability requirements. Please comment on the adequacy of proposed financial responsibility requirements, and whether legislative changes are needed.

Response. The proposed financial responsibility requirements are excessively vague in a number of respects. They do not specify a precise coverage amount (instead, they solicit comments on where, within a range of $50 to $500 million, to set a coverage limit; they also allow applicants to make a case for a lower limit); they leave unclear which activities must be covered and in what relative and absolute amounts; they evidence uncertainty as to what the purpose of the proposed financial responsibility requirements is intended to be; and they bear no necessary relationship to the availability of commercial liability insurance coverage and/or to the potential anti-competitive effects of allowing large companies to self-insure. I believe legislative attention to this issue is appropriate (and it may even be a legal necessity to permit court enforcement of financial responsibility requirements imposed administratively). My current view is that incinerator ship operators should be required to obtain liability insurance coverage for the transport-related elements of incinerator ship operations (which differ little from the corresponding elements of bulk chemical carrier operations) to the full limit of the commercial availability of such insurance (currently about $350 million per vessel). This is the most readily insurable component of incinerator ship operations. It is also the one associated with the most serious environmental and public health risk associated with such operations: the risk of a grounding or collision, with the catastrophic release of large volumes of highly toxic wastes. For the "burn" activities of the vessel and the associated long-term risks (where the first lines of defense are design, operational, and performance standards), EPA should require insurance coverage (or equivalent financial assurance) identical to that required under CERCLA for vessels (currently $5 million). Since this component is difficult to insure commercially (given hard-to-quantify future risks of low-level releases), and since the anti-competitive implications of self-insurance at this relatively low level of coverage are small, self-insurance should be allowed as an option. Finally, for long-term risks associated with shore-based transfer operations (and low-level operational releases, other than spills), insurance coverage (or equivalent financial assurance) should be required identical to that required under CERCLA for "facilities" (currently $50 million). Self-insurance should be permitted in connection with these operations also, for the same reasons as discussed for "burn"-associated activities. (Note: In devising financial responsibility requirements of this sort to apply to incinerator ships, consideration should be given to extending the same requirements, for all components other than the "burn" operations, to other bulk chemical carriers transporting hazardous substances.)

Question 3. Several witnesses have testified that vessel-mounted incinerators should be subject to the same pollution control technology and monitoring standards applied to land-based incinerators. Do you believe that [the] proposed standards are adequate?

Response. Yes, for the most part. I believe that vessel-mounted incinerators should be subject to pollution control technology and monitoring standards which afford at least equivalent protection of human health and the environment as those applied to land-based incinerators. I do not believe that certain technology-related requirements (e.g., installation of stack-scrubbers to remove acidity from the emission plume) should be mindlessly transplanted from land to the ocean without evaluating the need for such technology in the ocean environment. Stack scrubbers to neutralize acidic stack emissions, for example, are unnecessary and counterproductive on shipboard incinerators operating 150 to 200 miles offshore in the midst of the enormous buffering capacity provided by alkaline seawater. Destruction and combustion efficiency requirements (which determine the level of unburned and potentially toxic, residues), on the other hand, should unquestionably be fully applied to incinerator ships. Minimum "dwell times", combustion temperatures, and oxygen ratios, and maximum feed rates, are less important individually than they are in aggregate (in terms of the resultant destruction efficiency). For example, the combination of a shorter dwell time and a higher combustion temperature, can yield the same burn efficiency as a longer dwell time-lower combustion temperature combination. With respect to monitoring requirements, the same principle should apply (with due account taken of the unique difficulties of monitoring environmental fates and effects associated with emissions generated aboard a moving vessel in a dynamic seawater milieu). I believe more attention needs to be given by EPA, in consultation with the U.S. Coast Guard, to fundamental incinerator ship design and operation parameters in terms of associated risks of accidents and environmental releases--i.e., the relative merit of horizontal versus vertical incinerator stacks, towed versus self-propelled incinerator vessels, etc.

Question 4. Several witnesses have testified that ocean incineration permit applicants should be reviewed for prior compliance with environmental laws and regulations. In your view, should this step be included in the permitting process?

Response. Yes, along with other information on the applicant's operating experience, but not as a basis by itself for withholding permit issuance. I favor full disclosure of information which may bear on an applicant's ability to responsibly and competently discharge permit and regulatory requirements. On the other hand, I would not like to see older, more experienced companies excluded from the ocean incineration field solely because they or acquired subsidiaries had been the focus of past governmental enforcement efforts--especially in the absence of any comparable yardstick against which to assess the likely performance of brand-new companies proposing to enter the field for the first time. I am not willing to accept the proposition that inexperienced new entrants are necessarily and invariably more responsible and more competent than established companies with long, if not totally unblemished, operating histories.

Senator Lautenberg's Questions

Question 1. EPA's proposal provides that the Agency will presume there is a need to incinerate if the risks of ocean incineration are no greater than the risks for land-based alternatives. Are you satisfied with this needs test?

Response. No, because it does not precisely track London Dumping Convention requirements, and because it does not require incinerator ship operators to do a more region- and waste-specific assessment of their customers' ocean incineration needs (akin to what has been historically required of commercial barge operators engaged in direct ocean dumping). On the "needs" determination question, we have urged EPA to do four things: (a) Explicitly adopt within the regulation the "hierarchy" of more or less preferred hazardous waste management options (of the sort reflected in the 1984 RCRA amendments, and as recommended both by the Office of Technology Assessment and by the National Research Council of the National Academy of Sciences in other contexts). In making the assessments of "need" for ocean incineration (both on a generic and on a permit-specific basis), all alternatives positioned higher on the hierarchy (i.e., located above the "treatment/destruction" rung) should be required to be explored and assessed in terms of their total or partial implementability. (b) A generic (i.e., nationwide and regional) "needs" assessment should be made by EPA no less frequently than every five years. (c) In addition to this evaluation by EPA, the regulation should require incineration permit applicants (i.e., the incinerator ship operators), as part of their permit application, to make their own site- and waste-specific evaluation of need--based on the geographic area they propose to service and on information supplied by their customers concerning each individual waste stream. In general, the elements to be addressed in this site-specific evaluation should parallel the corresponding requirements under the regulations and criteria applicable to direct ocean-dumpers. Specifically, under 40 C.F.R. § 221.1(j), ocean dumping applicants must provide "a statement of the need for the proposed dumping and an evaluation of short and long term alternative means of disposal, treatment or recycle of the material"--including "an analysis of the availability and environmental impact of such alternatives." Furthermore, under 40.C.F.R. § 227.16, a need for ocean dumping will be deemed established if, but only if, "a thorough evaluation of the factors listed in § 227.15 has been made [and EPA]... has determined that ...: (1) "There are no practicable [process or treatment] which can be made... to reduce the adverse impacts of the waste on the total environment"; (2) "There are no practicable alternative locations and methods of disposal or recycling available... which have less adverse environmental impact or potential risk to other parts of the environment than ocean dumping." The ocean dumping regulations define waste treatment or improvements in processes and alternative methods of disposal as "practicable," "when they are available at reasonable incremental cost and energy expenditures, which need not be competitive with the costs of ocean dumping, taking into account the environmental benefits derived from such activity, including the relative adverse environmental impacts associated with the use of alternatives to ocean dumping." 40 C.F.R. § 227.16(b). (Unlike the proposed incineration regulations, 50 Fed. Reg. 8247, 3rd column, where EPA treats "need" as "presumptively demonstrated if ocean incineration poses less or no greater risks than practicable land-based alternatives," the ocean dumping regulations, at 40 C.F.R. § 227.15(c), encompass "the relative environmental risks, impact and cost for ocean dumping as opposed to other feasible alternatives.") Although incinerator ship operators are less well-positioned than their customers to evaluate the feasibility of waste-avoidance/process modification efforts, etc., this is no different from the situation of waste haulers for direct ocean dumping--who, like incinerator ship operators, apply for ocean dumping permits on behalf of numerous customers. It should be noted that, under the 1984 RCRA amendments, waste generators will be required to certify in their shipping manifests that they have evaluated waste minimization options. (RCRA § 3002). For ocean incineration permitting purposes, incinerator ship applicants could meet their responsibilities by forwarding to EPA "needs certifications" provided by their customers. (d) Finally, EPA should modify its proposed definition of "need" to more closely track the LDC definition--i.e., as a function of the "practical availability of environmentally better land-based methods of treatment, disposal or elimination."

Question 2. On Page 8 of your testimony, you suggest that a detailed assessment of the suitability of potential ports of origin would be desirable. Should ocean incineration be allowed to proceed without this assessment?

Response. Yes, because a mechanism already exists for precluding loading operations at potential ports of origin deemed "unsuitable"--i.e., the "inconsistency" provision of the Coastal Zone Management Act. (This enables coastal states with approved Coastal Zone Management Plans to disapprove activities in or affecting their "coastal zones" on the ground that they are "inconsistent" with the provisions of their CZM Plans.) In addition, § 102(a) of the MPRSA bars the issuance of an ocean dumping permit for dumping "which will violate applicable water quality standards", as established by the various coastal states. The assessment process I was suggesting was one that would, hopefully, better ensure that the suitability of various potential ports of origin would be assessed in a more holistic and comprehensive way--to identify suitable loading ports as well as unsuitable ones. This could be accomplished in either of two ways: either through a formal siting process, in which a group of suitable loading ports would be identified along a particular stretch of coastline accessible to a designated "burn" site; or (probably more palatably to coastal states and localities) through establishing loading site "suitability criteria" (including the sensitivity of coastal estuaries which would be traversed en route to the "burn" site) which would have to be applied before approval of a proposed port of origin.

I hope these answers are sufficiently responsive to the questions posed, and would be pleased to respond to any additional requests for information or NWF views concerning ocean incineration.

Sincerely,

Kenneth S. Kamlet

Kenneth S. Kamlet
Director and Counsel
Pollution & Toxic Substances
Division

c: Senator Frank Lautenberg
Senator John Chafee
Paul Chimes, Environment Committee Staff

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THE
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June 19, 1985

Statement of Sally Ann Lentz
on Behalf of
THE OCEANIC SOCIETY
before the
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
of the
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
Concerning
INCINERATION OF HAZARDOUS SUBSTANCES AT SEA

I am Sally Ann Lentz, Staff Attorney with the Oceanic Society's Ocean Policy Office in Washington, D.C. The Society is a 40,000 member non-profit organization devoted to the protection, conservation and wise management of marine and coastal resources. I appreciate the opportunity to testify on behalf of the Oceanic Society with regard to incineration of hazardous substances at sea.

The Oceanic Society has long been concerned with the marine environmental consequences associated with uses of our oceans and coastal areas. During the decade and a half since its founding, we have conducted a wide range of scientific and technical research, education and public policy programs in our continuing effort to focus the attention of decision makers and resource managers on the need for information-based marine policies.

In cooperation with a coalition of national and regional environmental and citizen organizations the Oceanic Society prepared a Briefing Report on EPA's draft regulations. The Society is using that preliminary analysis as a basis for detailed comments on the draft regulations that we will submit to EPA by June 28th. Since those comments will contain detailed analyses on many of the issues raised in your letter of invitation, I ask permission to submit a copy to the Subcommittee for inclusion in the hearing record.

At the public hearings on EPA's draft ocean incineration regulations, a wide range of national and regional environmental organizations criticized EPA's proposed efforts to initiate an ocean incineration program. Those organizations include the Environmental Defense Fund, the Environmental Policy Institute, Greenpeace and Sierra Club. The Coast Alliance, a national

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non-profit organization of groups and individuals concerned with coastal issues, adopted a policy statement opposing ocean incineration at this time. I have attached a copy of the Coast Alliance policy statement for inclusion in this hearing record.

The oceans, though vast and covering over 70% of the earth, are a vulnerable and complex environment. Numerous unique and important species live in or depend upon the oceans. Too often, however, our ocean and coastal resources are mismanaged due to narrow, short range special interests, with inadequate scientific understanding of the consequences. As a result, some of our ocean and coastal areas are approaching -- and others have reached or exceeded -- the limit of abuse and mismanagement that can be assimilated without suffering serious, perhaps irreversible, damage.

Policies affecting the future of ocean and coastal resources must be developed with environmental consequences as a primary consideration. They must be set with appropriate respect for the linkages in the ecosystem. An ecological ethic is essential in order to ensure the protection, conservation and wise use of our vital marine resources. It is in this context that EPA's recent efforts to launch a major new program for incineration of hazardous wastes at sea must be considered.

The Oceanic Society does not categorically oppose ocean incineration, but we believe EPA's recent issuance of draft regulations is premature in light of existing uncertainties about incineration technology and the effects of emissions on the marine environment. Further, EPA does not adequately address a number of legal and technical concerns in its draft regulations. It is the Society's position that these legal and technical issues must be appropriately resolved before permits for incineration at sea are issued.

I. Background

A. International Regulation

The practice of incinerating hazardous waste at sea was first regulated internationally under the Convention on the Prevention of Pollution by Dumping of Wastes and other Matter, which is popularly known as the London Dumping Convention (LDC). 26 U.S.T. 2403, TIAS 8165 (1972). The United States and all of the European states (with the exception of Belgium, which is an observer) are among that global treaty's 55 state members.

The state members of the LDC have included incineration at sea as a form of ocean dumping under that treaty. In general, the LDC prohibits ocean dumping of certain materials and establishes minimal regulatory requirements for ocean dumping of other wastes, including incineration at sea. Treaty provisions for the control of incineration at sea, including mandatory regulations, were adopted as amendments to the LDC in 1978. The general consensus of the parties was that incineration at sea should be viewed as an "interim" solution, pending the development of better alternatives. Consistent with that view, "recommendatory" interim technical guidelines on at-sea incineration also were adopted in 1978. When guidelines for incineration were adopted in final form in 1979, it was agreed that they be kept under review as the results of further research and investigations became available. For certain wastes where doubts existed as to the thermal destruction and efficiency of combustion, such as polychlorinated terphenyls (PCTs), special studies were mandated before permits could be issued.

Since 1979, the LDC's standing Scientific Group on Dumping (SGD) periodically has been apprised of research suggesting the need for revisions to the technical guidelines. The SGD has brought these matters to the attention of the treaty parties and some changes have been adopted. However, at no time since the adoption of the regulations and technical guidelines has the process of incineration at sea been reviewed in any comprehensive manner. At the last meeting of the SGD in March 1985, triggered in part by EPA's Science Advisory Board Report, the participants decided to request the treaty parties to convene an intersessional group of experts to address some outstanding scientific and technical questions about incineration at sea. This request will be addressed at a September 1985 meeting of the LDC parties in London.

Internationally, incineration at sea has never been treated as a panacea for dealing with hazardous waste. When the practice was first adopted in Europe it was indeed a progressive technology, far preferable to direct dumping of hazardous wastes into the sea, which was the customary practice at that time. It was recognized then, and is still recognized in Europe, as an interim measure, pending the development of better means for dealing with waste and subject to the results of research on its effectiveness.

The claim by EPA and industry that the technology has been "proven" in the North Sea is clearly refuted by the Science Advisory Board's report, which demonstrates substantial uncertainty about the ability of the process to completely destroy wastes without the creation of additional harmful by-products of combustion. Time alone is not sufficient to prove a technology. A technology is proven only upon a demonstration of its effectiveness. The Science Advisory Board and others in the scientific community currently question the effectiveness of the technology in destroying the wastes, and perhaps more importantly, have identified potential adverse effects of the process on the environment which have yet to be resolved.

B. U.S. Regulation

At the time the first incineration at sea technology began operating in Europe, it was common practice in the U.S. to dump organochlorine wastes directly into the sea. Upon passage of the Marine Protection, Research and Sanctuaries Act of 1972 (the "Ocean Dumping Act"), 33 USC 1401 et seq., land-based incineration, deepwell injection and landfill methods replaced dumping practices. The Ocean Dumping Act requires that criteria for the issuance of ocean disposal permits be promulgated after consideration of the environmental effects of the proposed dumping operation, the need for ocean dumping, alternatives to ocean dumping, and the effect of the proposed action on esthetic, recreational and economic values and on other uses of the ocean. (See, 40 CFR 227.1). None of these factors has yet been adequately addressed by EPA, as the following discussion demonstrates.

EPA published Final Ocean Dumping Regulations and Criteria in 1977 (superseding regulations published in 1973) that provide for regulation of waste disposal, evaluation of the environmental effects of various waste types, and management and designation of ocean disposal sites. 40 CFR 220-228. With regard to incineration at sea, these existing regulations only summarily provide for "research or interim permits until specific criteria to regulate this type of disposal are promulgated." (220.3 (f)).

The U.S. EPA issued research or interim permits for incineration at sea on several occasions between 1974 and 1982. In late 1983, EPA made a tentative decision to issue "special" permits for at-sea incineration under the existing ocean dumping regulations. That action met with strong public opposition, and the agency abandoned those efforts in the spring of 1984. Opposition at that time centered on EPA's failure to demonstrate the need for ocean incineration and its failure to demonstrate the environmental acceptability of the process. Further, there was widespread belief that the agency needed to promulgate specific regulations on incineration at sea before any full-scale regulatory program was implemented.

C. Recent Activities by EPA

At present, the U.S. has deferred the consideration of further operating permit applications pending the revision of the existing regulations. Over the past several months EPA has responded to these public concerns by developing draft regulations, by conducting an Incineration Study (including a comparative study of land- and sea-based incineration), by developing an environmental research strategy, and by asking its Science Advisory Board (SAB) to assess research needs on incineration. Rather than answering the myriad of concerns posed by the public regarding EPA's incineration program, however, EPA's efforts have focused attention on what little is known about the suitability of ocean incineration as a means of hazardous waste management.

The SAB Report indicates the need for substantial further research on fundamental questions regarding the technological capacity of incinerators to destroy wastes totally and our ability to measure adequately that destruction, as well as the effects of incinerator emissions on human health and the well being of the marine environment.

EPA's Research Strategy does not address legal, policy, regulatory or procedural issues. Its assessment of the risks of incinerator operations to human health and the environment is limited to effects of emissions generated by the burn alone. Other risks associated with incinerator operation, such as risks related to spills and fugitive emissions, are not included. Long-term environmental monitoring also is not included.

The research proposed under the Strategy is to be conducted on a burn of PCBs, rather than the full range of wastes currently slated for incineration at sea. EPA officials have indicated that research conducted under the Strategy will not be completed until December, 1986. Thus, the results of the Strategy will not be in before the time EPA intends to issue permits.

The Incineration Study, conducted by EPA's Office of Policy, Planning and Evaluation (OPPE Study) is divided into five substantive parts, including: EPA's regulatory approach for incineration; a description of incineration technology; an analysis of the current and potential market for incineration; a comparison of risks from land-based and ocean-based incineration[*]; and public concerns regarding incineration. A Background Report is devoted to each of these parts with the exception of the regulatory approach section which appears in the Summary and Conclusions.

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[*] The risk comparison undertaken by OPPE is limited to considering only incineration systems. It does not consider potential environmental or economic risks or benefits from use of other methods of hazardous waste treatment, storage or disposal. Background Report IV: Comparison of Risks from Land-Based and Ocean-Based Incineration, p. I-18.

In general, the absence of an adequate data base for the OPPE Study has raised considerable questions about EPA's reliance upon the findings and use of this Study to justify decisions regarding incineration at sea. Even when data was available, adjustments to that data based upon highly speculative estimates and the exclusion of other important considerations, rendered the conclusions virtually unreliable.

For example, in its comparative risk assessment of land- and ocean-based incineration, OPPE identifies the added dimension of transport of the waste at sea as one of the major differences between the two systems, yet the ability to clean up spills at sea is not factored into the risk assessment. With regard to the market assessment of incineration, OPPE applied highly speculative estimates of the effects of regulatory restrictions on other land-based disposal options. When several such estimates are factored into the analysis, the results are highly suspect. In addition, the market analysis fails to account for progress in the area of waste reduction as a basis for potential decrease in demand.

We question the use of this study for any purpose, but the application of its results to justify the institution of a major new hazardous waste disposal program is especially inappropriate, if not irresponsible.

II. Legal Issues

Legal issues associated with incineration at sea focus on consistency of EPA's initiatives with domestic and international requirements for ocean dumping.

A. The "Needs Determination and Development of Alternatives to Ocean Dumping

Both the U.S. Ocean Dumping Act and the London Dumping Convention require a determination of need for the dumping activity as a criteria for evaluating an ocean dumping permit.

The Ocean Dumping Act directs EPA to take into consideration nine factors when it establishes criteria for permits. The Act lists "need for the proposed dumping" as the very first factor upon which EPA's criteria must be based. 33 U.S.C. Section 1411(a). Existing regulations under the Act interpret the needs determination as requiring a comprehensive evaluation of potential reduction, treatment, and disposal options for the waste proposed for dumping. (227.14-227.16) Currently, a permit for ocean dumping in the U.S. will be issued only upon demonstration that "[t]here are no practicable improvements which can be made in process technology or in overall waste treatment to reduce the adverse impacts of the waste on the total environment..." and "[t]here are no practicable alternative locations and methods of disposal or recycling available, including without limitation, storage until treatment facilities are completed, which have less adverse environmental impact or potential risk to other parts of the environment than ocean dumping...." (227.16(a)(1) and (2))

Also, under existing regulations, on the basis of the need for and alternatives to ocean dumping, permittees may "be required to terminate all ocean dumping by a specified date, to phase out all ocean dumping over a specified period or periods, to continue research and development of alternative methods of disposal and make periodic reports of such research and development in order to provide additional information for periodic review of the need for and alternatives to ocean dumping...." (227.16(c))

The existing regulations reflect the spirit in which the Ocean Dumping Act was enacted. The intent is to ensure that the use of ocean dumping will not impede the development of better solutions to hazardous waste management. This goal is achieved by strictly limiting the use of ocean dumping when environmentally acceptable methods for reduction, treatment, and disposal are available on land.*

This same spirit is reflected in the needs determination required under the LDC, which states that before any permit for ocean incineration may be issued, the permitting authority must consider "[t]he practical availability of alternative land-based methods of treatment disposal or elimination, or of treatment to render the matter less harmful for dumping at sea." LDC Annex III. The purpose of the needs determination to prevent the substitution of ocean incineration for environmentally preferable solutions is further reflected in Regulation 2 of the LDC which states:

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*Section 2 (b) of the Ocean Dumping Act, Public Law 92-532, October 23, 1972, states:

> The Congress declares that it is the policy of the United States to regulate the dumping of all types of materials into ocean waters and to prevent or strictly limit the dumping into ocean waters of any material which would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. (emphasis added).

> Incineration at sea shall in no way be interpreted as discouraging progress towards environmentally better solutions including the development of new techniques.

Thus, like the existing ocean dumping regulations, the LDC maintains a presumption against ocean dumping in favor of practicable alternatives.

EPA's draft regulations make no mention of a needs determination in spite of the domestic and international directives to do so.* Only in the Supplementary Information does EPA address the question of need, where it states that "need will be presumptively demonstrated if ocean incineration poses less or no greater risks than practicable land-based alternatives." Supplementary Information, p. 8247. This standard is clearly inconsistent with domestic and international presumptions against ocean dumping.

EPA proposes to prepare a "generic assessment" of the need for ocean incineration (yet to be developed) which will establish a rebuttable presumption of need for the issuance of individual permits. EPA will consider the issue of need "[o]nly where information is submitted or is available to the Agency which indicates that an applicant's operations are unique from those considered in the generic analysis or which demonstrate that the information which the Agency based its assessment have significantly changed...." Supplementary Information, p. 8248

EPA attempts to justify this departure from established EPA practice and domestic and international imperatives on the basis that ocean incineration differs from land-based incineration because, unlike applicants for land incineration permits, ocean incineration applicants are generally not the generators of the waste they burn. The implication is that information on the source of the waste and means for reduction and recycling will not be readily available from the permit applicant. This factor does not lessen the importance of the needs assessment and does not sufficiently justify virtually eliminating need as a permit criteria.

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* Indeed, the Supplementary Information is entirely misleading, as it implies that Section 234.50(c) includes the factor of need as one of the criteria used in evaluating operating permits. p. 8228. Section 234.50(c) does not exist in the draft regulations.

Aside from the fact that EPA has no discretion to ignore domestic and international imperatives, its new definition of need is directly contrary to the desire to promote development of environmentally sound alternatives. EPA's proposal would enable generators of ocean incinerable wastes to escape a demonstration of no practicable reduction, treatment or disposal alternatives. Such a system will encourage generators to seek outsiders to dispose of their wastes rather than developing waste-specific methods for reduction, treatment and disposal on site. This arrangement is completely contrary to EPA's supposed goal of encouraging environmentally better solutions to waste management.

The issuance of the draft regulations, coupled with EPA's call for between 8 and 33 incinerator vessels by the end of the decade, raises fears that the use of this technology will in fact discourage the development of environmentally better solutions, contrary to LDC Regulation 2, cited above. Given the unreliability of current projections of need, it is not unreasonable to predict that the launching of even a small fleet of such ships may create a new market for the generation of liquid incinerable wastes.

The option to incinerate hazardous waste at sea can not be considered in a vacuum, and must be assessed in light of long term goals for disposal of hazardous waste. The effect of EPA's initiative to promote incineration at sea on the development of environmentally preferable alternatives and on the hazardous waste disposal market, in general, has not been assessed adequately.

Recent trends in the European approach to hazardous waste management cast doubt upon the adequacy of EPA's efforts to promote alternative means of treating and disposing of wastes. A recent report by the government of the Netherlands* indicates that both the Netherlands and the Federal Republic of Germany expect a sharp decrease in the amounts of waste to be incinerated at sea because of significant strides in the reduction of amounts generated, new treatment methodologies (including recycling), and the construction of new land-based incineration facilities. Only the United Kingdom forcast a potential increase in the use of incineration at sea, based on small but steady increase in the past few years. The UK noted that "it is not possible to determine this increase accurately at this stage."*

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* The Netherlands, "Alternative Means of Disposal For Organochlorine Wastes," presented at the Twelfth Meeting of the Standing Advisory Committee For Scientific Advice of the Oslo Commission (SACSA), Hamburg, March 19-22, 1985, pp. 2-4.

Indeed, under the Oslo Convention**, a regional convention which regulates incineration activities in the North Sea (where virtually all ocean incineration currently takes place), Europeans hope to phase out entirely the use of ocean incineration by the year 1990. Rule No. 2.3 of the Oslo Convention reflects the view that incineration at sea is an interim solution, stating that, "[t]he Commission will meet before the 1st of January 1990 to establish a final date for the termination of incineration at sea." Clearly, the Europeans, with over a decade of experience with incineration at sea, do not view the process as the panacea that EPA would have us believe. Some industry concerns are responding to this imminent turn of events, and are encouraging the development of a U.S. market to fill the void left by the Europeans.

Europeans currently have the national machinery in place to continue issuing permits but, in many instances, have opted for reduction, recycling and land-based treatment programs. They recognize that disposal -- whether on land or at sea -- is not the solution, and are looking toward beneficial uses of hazardous waste through reduction and recycling methods. Given the progressive environmental stance the U.S. traditionally has adopted in the international arena, the current EPA initiatives with regard to incineration are incongruous, especially in the face of European trends toward abandonment of the process.

Experts at previous Congressional hearings have testified that the wastes intended for ocean incineration may indeed be suitable for reduction, treatment and alternative disposal options. Indeed, we are told that some of the wastes being considered for incineration at sea are the most appropriate wastes for recycling and reuse.

Experts have identified a series of innovative treatment technologies which promise effective and environmentally sound alternatives to burning wastes at sea. These include plasma arc torches, wet air oxidation, molten salt reactors, closed chambers that destroy PCBs and other chlorinated hydrocarbons by molecular fracture, and portable dechlorination trucks and incinerators.

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* Id., p. 2.

**The Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, Int'l Legal Materials (1092) II 262 (1972).

These new technologies are acknowledged in "Background Report II: Assessment of Emerging Alternative Technologies" of the OPPE Incineration Study which notes that cost figures for all these technologies is not available. It is suggested that while some of them will exceed the cost of incineration, others will be comparable to conventional incineration. OPPE wisely recognizes that the value of these technologies should not be measured by cost alone, however:

> It should be pointed out that each of these systems offers advantages over conventional incineration for specific waste streams that may more than offset the increased costs. Some advantages are: the ability to handle small and large quantities of highly toxic wastes; smaller units to make on-site treatment economically feasible and eliminate safety factors of handling and transportation; portable units; and less production of air emissions. Thus, decisions about the probability of these technologies replacing incinerators cannot be made on the basis of cost alone. (p. 4.)

All of the alternative technologies surveyed by EPA are already commercially available or will be available within the next five years. EPA is currently developing standards for these processes similar to those for hazardous waste incinerators. Certainly the nature of the regulatory standards will affect the commercial viability of the new processes. But the initiation of an incineration at sea program can be expected to have a much greater impact because of the sheer volumes of waste intended for burning at sea.

OPPE estimates that alternative technologies will have minimal impact on the quantity of liquid waste currently destroyed in conventional processes, because it is expected that these new processes will be used only on the most toxic wastes. EPA provides no basis for this hypothesis. Further, no estimate is given of the effects of an ocean incineration program on further commercialization and use of these alternative technologies. We might expect that lower costs in many instances, and shifting the burden for obtaining a permit to the waste disposer, will discourage some generators from seeking the use of alternative treatment and disposal options.

In sum, the draft regulations are directly contrary to and inconsistent with domestic and international legal requirements for sound hazardous waste management and should be revised accordingly. EPA should retain provisions in the existing Ocean Dumping Regulations (40 CFR 227, Subparts C,D, and E) relative to a needs determination that are consistent with the LDC. To do otherwise is to eliminate incentives for commercial expansion of source reduction, recycling and reuse of hazardous waste.

In particular, applicants should be required to identify the source of the waste to facilitate the determination of need. In this regard, EPA should retain Section 221.1 of the existing ocean dumping regulations which requires the applicant to name the person(s) or firm(s) producing or processing the wastes, identify the specific process or activity giving rise to the production of the material, and describe the manner in which the waste has been previously disposed of.

Those provisions should be further strengthened by requiring applicants to list alternative disposal methods for the permitted waste and to seek out available means for treating the waste. EPA should conduct a similar analysis of disposal and treatment alternatives and provide that information to the public as justification for issuing the permit. To ensure that information relative to the needs assessment is made available, it may be necessary to formally involve the waste generator in the permit process.

B. Additional U.S. Ocean Dumping Act Requirements

EPA's ocean incineration program has raised a number of other legal concerns regarding both the LDC and domestic statutes. In addition to requiring a showing of need and consideration of alternatives to ocean dumping, the U.S. Ocean Dumping Act requires that criteria for the issuance of ocean disposal permits be promulgated after consideration of the environmental effects of any proposed dumping operation and the effect of the proposed action on esthetic, recreational and economic values and on other uses of the ocean. (See, 40 CFR 227.1).

Based on the SAB recommendations, it is clear that we do not as yet know what the effects of ocean incineration will be on the marine environment. Nor do we know enough about effects on the terrestrial environment to make a reliable comparison of the two. Effects on human health from land- or sea-based incineration also are unknown. Absent such information, EPA is unable to satisfy requirements under the Ocean Dumping Act to consider environmental effects prior to promulgation of these proposed regulations. EPA itself acknowledges the absence of adequate knowledge about effects on the marine environment, since its Research Strategy calls for an assessment of both short and long term effects of incineration emissions on the marine environment. As noted above, however, this research will not be completed prior to final promulgation of regulations.

A permit application also should involve an evaluation of the effect of incineration activities on other uses of the ocean. The Ocean Dumping Act requires that EPA establish criteria for reviewing and evaluating permit applications with regard to the "effect on alternate uses of the ocean, such as scientific study, fishing, and other living resource exploitation, and non-living resource exploitation." (33 U.S.C. Section 1412 (a) Based upon that statutory directive, existing ocean dumping regulations include rather extensive standards for evaluation of the impact of the proposed dumping on esthetic, recreational and economic values and other uses of the ocean. (227.17 - 227.22). These standards have been inappropriately deleted from EPA's draft regulations on incineration and should be retained to satisfy the requirements of the Ocean Dumping Act.

C. Failure to Prepare an EIS

EPA has failed to prepare an Environmental Impact Statement (EIS) on the proposed regulations as required under the National Environmental Policy Act of 1969 (NEPA), as amended, 42 USC 4321 et seq. It has rescinded its own voluntary policy statement for implementing NEPA procedures in relation to the draft regulations, and has ignored a promise to prepare an EIS that was stated in the Final Environmental Impact Statement for the Incineration of Wastes at Sea Under the 1972 London Dumping Convention (1979) (LDC EIS).

Under NEPA, an EIS is to be included in every recommendation or report on proposals for legislation and "other major Federal actions" significantly affecting the quality of the human environment. 42 U.S.C 102(2)(C). The Council on Environmental Quality, acting pursuant to Executive Order 11991 (May 24, 1977) issued regulations on the implementation of NEPA (43 Fed. Reg. 55978, November 29. 1978), which state that "[f]or informal rulemaking the draft environmental impact statement shall normally accompany the proposed rule." 40 C.F.R. 1502.5(d).

In 1974, EPA published a voluntary EIS policy which stated that the Agency would prepare an EIS in conjunction with promulgation of regulations under the Ocean Dumping Act. 39 Fed. Reg. 16186, May 7, 1974. Consistent with that policy, EPA prepared the LDC EIS when the LDC provisions were established for the incineration of hazardous wastes; for incineration site designations for the Gulf site and the North Atlantic site; and for other dumping activities under the Ocean Dumping Act. Moreover, in relation to the NEPA review of the LDC provisions, that EIS clearly stated that "EPA will prepare environmental impact statements before promulgating interim or final national regulations and designating each new burn site." (p. I-2).

EPA claims that it has no obligation under NEPA to prepare an EIS for the purpose of this rulemaking. Curiously, the Agency now points to the LDC EIS, completed over 6 years ago, to satisfy such requirements. The Agency acknowledges that, since the publication of the LDC EIS, additional data and information pertinent to an EIS on incineration has been generated. Yet, it is unwillingly to incorporate this new information into an EIS in relation to its domestic regulations.

Of special concern is the fact that EPA has singled out this particular rulemaking for rescission of its voluntary policy. The agreement to prepare an EIS will continue to apply to other rulemakings under the Ocean Dumping Act, and to other acts referred to in that policy statement.

The U.S. Supreme Court has stated that an EIS is only the "outward sign that environmental values and consequences have been considered." Andrus v. Sierra Club, 442 U.S. 347, at 350 (1979). Ultimately, what NEPA seeks are environmentally better agency decisions. The EIS was not intended by Congress as an end in itself, but rather, as the CEQ regulations state (40 CFR Section 1500(1)(c)):

> The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

With that broader purpose in mind, EPA's decision to rescind its policy statement (and its complementary LDC-related promise) to prepare an EIS for this particular regulatory action gives cause to question seriously the extent of EPA's committment to NEPA principles as it moves forward with the incineration program.

D. Additional Inconsistencies with LDC Requirements

In addition to the fundamental failure of the draft regulations to satisfy the LDC "needs" requirement, as indicated above, inconsistencies between the LDC requirements and EPA's draft regulations have also been identified with regard to the treatment of mercury and cadmium; EPA's reluctance to conduct pilot scale tests where there are doubts about the thermal destructibility of a particular waste (including PCBs, TCDD, DDT, PCTs, and BHC); the absence of special provisions for containerized approaches to at-sea incineration; and operating requirements (including, minimum wall temperature, destruction efficiency for particular compounds, and positioning of measuring devices, and identification of products of incomplete combustion in waste analyses). These inconsistencies will be discussed in much greater detail in comments to be submitted to EPA.

E. Relationship to Other Federal Laws

The draft ocean incineration regulations govern only a portion of the process involved in implementing an incineration at sea program. A comprehensive regulatory scheme is needed to ensure that all phases of the process are adequately controlled.

1. Failure to Reference All Applicable Laws

The draft regulations refer specifically to only two applicable federal statutes, i.e., the Coastal Zone Management Act, 16 USC 1451 et seq., and the Endangered Species Act, 16 USC 1531 et seq. The draft regulations do not fully incorporate all the requirements of those two acts. More explicit references would serve as a clear indication of all the conditions associated with an incineration permit and would further ensure satisfaction of their statutory mandates.

In addition, no reference is made to other applicable federal statutes and regulations. Specifically, EPA fails to address applicable Coast Guard regulations,* the Resource Conservation and Recovery Act of 1976 (RCRA), 42 U.S.C. Section 6901 et seq.; the Toxic Substances Control Act, (TSCA), 15 U.S.C. Section 2601 et seq.; and the Occupational Safety and Health Act of 1970 (OSH), 29 U.S.C. Section 651 et seq. The applicability of these statutes and regulations will be addressed further in comments to be submitted to EPA.

2. Gaps in the Regulatory Process

In addition to EPA's failure to adequately incorporate existing federal laws that govern various aspects of the ocean incineration process, several gaps in regulatory requirements have raised further uncertainties about the safety of incineration operations and our ability to adequately regulate this activity. Specifically, the absence of regulations concerning incinerator vessel construction and design, port designation, and transfer of bulk liquid cargoes other than oil are of particular concern.

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* For example, 33 C.F.R. Parts 126 and 156, governing handling of hazardous materials at waterfront facilities and transfer of hazardous materials.

a. Vessel construction and design requirements

The Coast Guard is responsible for establishing construction and design standards for incineration vessels. The rulemaking for promulgating these standards is in its initial stages. A draft of the proposed regulations is expected to be available by June, 1985, for public comment. Construction and design features built into these vessels will bear directly on the ability of the ship to withstand sudden impact and other stress, and thereby prevent a spill. This factor is of particular interest to the public in its assessment of the relative safety and environmental acceptability of the incineration process.

b. Port designation

Selection of suitable ports for transfer of hazardous wastes to incinerator vessels has not been addressed in the draft regulations. It is unclear which, if any, federal agency is responsible for this determination. To the extent that no agency has yet assumed such responsibility, it is essential that EPA take the necessary steps to develop criteria for port selection. Not every port will be suited to accommodate incineration vessels, and criteria should be established to make that determination. In carrying out this task, it may be appropriate for EPA to involve the Coast Guard in drawing up the criteria to be used in making such determinations.

c. Transfers of bulk liquid cargoes

With regard to transfers of bulk liquid cargoes other than oil, a recent Coast Guard study* shows that "such substances are regulated in less detail than oil, although the estimated spill rates for oil and dangerous cargoes are not significantly different." For example, a facility that handles bulk liquid cargoes other than oil would not be subject to Coast Guard requirements for pollution prevention in 33 CFR Parts 154 and 156. In addition to equipment specifications, these rules include requirements for filing an operations manual, cleaning up spills, and preparing a Declaration of Inspection for the terminal.

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* U.S. Department of Transportation Research and Special Programs Administration Transportation Systems Center, Staff Study, Assessment of the Need for Changes in the U.S. Coast Guard's Safety Regulations for Waterfront Facilities (September, 1984).

The transfer of the hazardous waste from transport mode to waterfront facility to incineration vessel is an area of serious concern as regards the effects of spills on both human health and the environment (water, land and air) in the port area. Existing Coast Guard regulation of this aspect of the process is not sufficiently clear. EPA and the Coast Guard should enter into an MOU concerning which agency will take responsibility for this stage of the process, and existing or proposed regulations must be modified to indicate clearly both agency authority and applicable requirements.

3. Fragmented Regulation of Waterfront Facilities

An additional concern with regard to proper regulation of incineration activities is the fragmented regulatory oversight of activities and safety at waterfront facilities. Several Federal agencies currently oversee different aspects of activity at waterfront facilities. The Coast Guard regulates bulk liquids and dangerous cargoes; the Materials Transportation Bureau (MTB) covers paperwork, packaging, marking, labelling, and placarding; and the Occupational Safety and Health Administration (OSHA) addresses worker safety at containerports. OSHA has regulatory authority for worker safety at waterfront facilities, while the Coast Guard regulates fire safety and handling and storage of dangerous commodities.

No single standard, issued by one agency, covers waterfront facilities. Instead, such safety is governed by a series of regulations issued by different agencies under different legislative mandates. This myriad of federal jurisdiction at waterfront facilities raises concerns about the effectiveness of control over the activities undertaken there.

In sum, complete and effective regulation of incineration activities from the source of the waste to its ultimate disposal requires that the proposed regulations spell out in detail which agency is responsible for various aspects of each phase of the process, and should indicate specifically other regulations that must be applied. Memoranda of Understanding (MOUs) between and among the various federal agencies concerned should be adopted with regard to the incineration program so that responsibility is understood clearly by the responsible governmental authorities, and by the public as well.

F. Consolidated Procedural Regulations

EPA plans to include incineration permits within its consolidated permit program. In doing so, EPA proposes to eliminate the opportunity for an adjudicatory hearing and to eliminate the Hearing Officer's Report, two practices which have been a part of the Ocean Dumping Act permit program since it was instituted.

In relation to adjudicatory hearings, EPA's Supplementary Information states that "such proceedings create significant resources burdens on both the Agency and the public" (p. 8239). However, the Agency admits that "[o]f the few Agency permit issuance decisions concerning ocean incineration, none have resulted in a request for an adjudicatory hearing." Id. It is difficult to perceive a "significant resource burden" on EPA and the public when, as EPA states, adjudicatory hearings are only requested occasionally.

Rare requests for adjudicatory hearings do not undermine their importance, however. The hearings provide public participation that is essential to legitimize Agency action and to enhance the quality of its work. Adjudicatory hearings are the only means of assuring that all interests will have a meaningful opportunity to participate when factual questions are sharply disputed.

With respect to the Hearing Officer's Report, that document serves a useful purpose by establishing a record for the adjudicatory hearing, and by providing the public with a better understanding of the reasoning behind the Agency's decision. Any delays in the process that might result from preparing such a Report are far outweighed by the benefits to be derived by the general public and by any final decision based on the Hearing Officer's account of the dispute.

6. Liability and Compensation

Questions regarding liability and compensation for ocean incineration activities have not been adequately addressed. As an underlying principle, the proposed regulations must provide for internalization of all costs associated with the issuance of a permit and activities undertaken pursuant to that permit. Issuance of a permit provides the holder with a privilege to pursue substantial economic gain as a result of the activities. For the permittee, the operation of an incinerator vessel is a profit making venture, not a public service. Absent the profit motive, there would be no incineration at sea industry. Given the economic gains to be had by incinerator operators, EPA's proposed regulations should provide for industry internalization of all its costs and any other potential costs associated with incineration at sea.

The transport, handling, and disposal of hazardous wastes is sufficiently dangerous by nature that the foreseeable risk from such activity can not be eliminated regardless of the duty of care placed on the permittee through traditional legal concepts. Accidents are an inherent risk in the profitable business of hazardous waste disposal. Rather than the victim bearing the consequences of such risk, this cost should be borne by the permittee. The costs of clean up and compensating the victims for damages may then be passed on to the consumers or stockholders, who are the ultimate beneficiaries of the activity. The amount of insurance required of a permit applicant should be adequate to cover all costs associated with an accidental spill.

Third party liability has been ignored entirely in the draft regulations, yet this is an issue of great concern to the public. Most federal statutes governing marine pollution do not authorize private damage actions. Instead, for the most part, civil and criminal penalties are imposed for violations. One exception, however is the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) or "Superfund", 42 U.S.C. 9601-9656. CERCLA does provide for liability by responsible parties for governmental and private party cost of cleanup and damage to natural resources. However, private parties may recover only response costs approved under the National Contingency Plan and certified in advance by EPA. No private response costs have been pre-certified pursuant to that authority. The CERCLA liability provisions therefore may be of little value to most private citizens seeking redress for damages.

Many limitations exist with regard to actions brought by private citizens under federal maritime law as well. The Limitation of Liability Act, 46 U.S.C. 181-189, is probably the most important limitation on recovery for a maritime tort. That Act limits a shipowner's liability under most circumstances to the remaining value of the ship and its cargo. Application of this limitation following the Torrey Canyon oil spill resulted in a recovery of fifty dollars, the value of the one remaining lifeboat.

Although a majority of states have statutes similar to Superfund, only a dozen of those authorize victim compensation from the state fund or provide for private damage actions for damages resulting from hazardous substance releases. Principal recourse for claimants unable to sue in one of those dozen states is state common law. Whether seeking redress through state statutes or common law, plaintiff's must rely primarily on state common law causes of action, such as strict liability, negligence (which may be difficult to prove), and public nuisance and trespass (useful for property damage only). However, the

Limitation of Liability Act would seriously limit recovery under these state remedies.

In sum, existing law does not adequately provide for recovery by private parties who have sustained damages resulting from a spill of hazardous substances. EPA should address this concern in its proposed regulations, by requiring applicants for incineration permits to waive their limits of liability and to secure insurance coverage for third party claims.

III. Technical Issues

Unresolved technical issues associated with incineration at sea focus on uncertainties about the effectiveness of the technology and the impact of incineration on the marine environment and human health.

A. Technical Uncertainties

The public is not fooled by at least one industry representative's claim that incineration of hazardous wastes at sea does not constitute ocean dumping but rather is a treatment technology that "destroys" the waste. Incineration constitutes a method for destruction and disposal. Whereas a large percentage of the waste is destroyed, it is clear that the remainder is disposed of or dumped in the environment. It is this remainder that constitutes cause for concern. If the cargo capacity of an incinerator vessel is approximately 4000 MT (metric tons) of waste* a single voyage will release at least .4 MT of waste into the environment, even assuming a rather high destruction efficiency of 99.9999. This is not an insubstantial amount of unaccounted for waste, given the uncertainty of the nature of the emissions, their short- and long-term effect on marine and human life and the cumulative impact of many burns.

The Science Advisory Board admits that little is known about the content of ocean incinerator emissions. It has been suggested, however, that compounds formed in the combustion process and released into the environment through the stack emissions (products of incomplete combustion or PICs) may in fact be more toxic than their precursor compounds. The nature and amount of PICs produced during the combustion process is virtually unknown. The OPPE study estimates an annual release of 20.6 metric tons of PICs as a result of ocean-based incineration of ethylene dichloride wastes as compared to a .6 metric ton release from land-based incinerators.

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* OPPE, Background Report IV: Comparison of Risks from Land-Based and Ocean-Based Incineration, (1985), A-2.

EPA has been criticized by The SAB and others in the scientific community for its reliance on "destruction efficiency" (DE) as a measure of incinerator performance. Destruction efficiency is a measure of the percentage of waste that has been destroyed. EPA proposes to use DE as a means for determining that the incinerator is performing at an acceptable level, but intends to measure only pre-selected compounds rather than the entire content of the waste stream. The reliance on DE does not constitute an adequate control over incinerator emissions, because it controls the percentage rather than the amount of toxic substances emitted into the environment. The Science Advisory Board has explicitly stated that DE is a suspect measure of incinerator performance -- because it tests only pre-selected compounds and does not account for the creation of PICs. The use of DE is especially inappropriate for ocean incinerators where, because of the absence of scrubbers for cooling, the emissions are particularly difficult to measure. Further, the OPPE study indicates that the proposed destruction efficiencies have not consistently been achieved.

The treatment of metals in general under the draft regulations is another major area of concern. The uncontrolled release of metals into the environment constitutes a significant difference between land- and ocean-based incineration. In land-based systems, metals are transferred to scrubber effluent where they are disposed of under controlled conditions. On ocean-based incinerators metals are released into the environment through stack emissions. On that basis, stack emissions of organics and metals in ocean-based systems are expected to be 5 times higher than in land-based systems.*

For example, OPPE states that for burns of ethylene dichloride (EDC) organics and metals released by the ocean-based incinerator, the release is more than 50% greater than that expected for land-based incinerators. This amounts to an estimated 54.8 MT per year released by ocean incinerators compared to 34.8 MT per year released by land-based incinerators.**

EPA offers no justification for allowing the release of larger amounts of metals into the marine environment from ocean -based incinerators. This favorable treatment of ocean incinerators is unjustified and will lead to unreasonable and unnecessary harm to the environment.

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* EPA Office of Policy, Planning and Evaluation, "Assessment of Incineration as a Treatment Method for Liquid Organic Hazardous Wastes -- Background Report IV: Comparison of Risks from Land-Based and Ocean-Based Incineration," March, 1985, p. 1-10.

**Id.

The absence of scrubbers on ocean incinerators will result not only in the uncontrolled release of metals, but the absence of scrubbers will emit large amounts of acid into the air, the effects of which may be devastating for marine life in the delicate microlayer of the ocean and may further contribute to acid rain. Some companies have designed scrubbers for their ocean incinerators, but these designs propose to dump the scrubber water directly into the ocean. These systems rely on the "buffering capacity" of the ocean to dilute the acid to acceptable levels. But scientists disagree on the extent of the ocean's buffering capacity and it has been suggested that the delicate organisms of the microlayer will not escape destruction.

B. Impacts on the Environment

As noted above, EPA's Science Advisory Board concluded that little information exists regarding the impact of incineration emissions on the marine environment. If EPA must proceed in the face of scientific uncertainty, then it should do so with great caution. Environmental monitoring is critical to resolving unanswered questions that have been raised. Only by continuing to gather and analyze information regarding environmental effects will we be able to determine the environmental acceptability of this practice.

Extensive environmental monitoring must take place during research burns, trial burns and operational burns. The proposed regulations do not provide for the necessary environmental monitoring. The trial burn plan (234.17) does not include appropriate environmental monitoring requirements. Under a research permit (234.60) some environmental monitoring may be required, though that is only at the discretion of the Permit Program Manager. The expertise of the Permit Program Manager may not be suited to that task. A delineation of the Permit Program Manager's qualifications as a basis for making such a determination should be specified in the regulations. Finally, the proposed regulations fail to require any environmental monitoring during operational burns. It is essential that every opportunity to collect data be utilized.

Appropriate environmental research and monitoring should focus on the areas of greatest impact from incinerator emissions. Special attention should be given to the microlayer, or "surface skin" of the ocean. The Science Advisory Board (SAB) Report indicates that "[t]he first contact of any combustion product with an aquatic marine or fresh water system occurs at the water surface or near to the surface if scrubber water is injected into the water column" (p. 32). The properties of the microlayer differ from those of the subsurface. As stated by one scientist, "it [the microlayer] concentrates toxic heavy metals and retains long-lasting chlorinated hydrocarbons, such as DDT and the polychlorinated biphenyls."* The nature of the incineration process and the peculiar characteristics of the microlayer suggest that the microlayer will experience the greatest impact from incinerator emissions.

The microlayer supports a wide variety of phytoplankton and zooplankton (neuston), including eggs and fish larvae for many commercial fisheries.** Thus, in addition to other effects, toxic chemicals which find their way into the microlayer may have a direct impact on harvestable fish yields by affecting reproductive success. This hypothesis was tested by measuring in open ocean waters a technically sublethal effect of sea surface pollution directly on a reproductive phase of a fishery resource species.*** This research demonstrates the ability to monitor biological effects of sea surface water pollution. State of the art methodology also exists for measuring chemical impacts on the microlayer.

Scientists admit there is still much to learn about the role of the microlayer and neuston in the marine ecosystem. Given the propensity of the microlayer to accumulate toxic particulate matter, and our lack of knowledge about the effects of emissions on these organisms, we question whether it is appropriate to allow incineration to take place. But if it is to occur, it must be conducted with all due caution and prudence. In addition to monitoring of biological effects, at a minimum, monitoring should include data on chemical concentrations of emissions on biota in the microlayer, with particular attention to the presence of metals and organochlorines. Monitoring must be ongoing, from start to finish.

In addition to measuring impacts on the microlayer, a thorough environmental monitoring plan should also include an examination of impacts on indigenous benthic and water column biota. Caged animal studies may be an appropriate means for determining water column impacts from incinerator emissions.

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*Longwell, A. Crosby, "A Genetic Look at Fish Eggs and Oil", 20 Oceanus 46 (1977) at 47.

**Scientists have documented the presence in the microlayer of eggs and fish larvae of squid, blue crabs, American lobster, hake, and bluefish, among others.

***Longwell. A. Crosby and J.B.Hughes, "Cytologic, cytogenic, and developmental state of Atlantic mackeral eggs from sea surface waters of the New York Bight, and prospects for biological effects monitoring with ichthyoplankton", 179 Rapp. R.-V. Reun. Cons. Int. Explor. Mer. 275-291 (1980).

This research should also provide information for potential impacts on the food chain that could ultimately affect human health. Similarly, further research is needed on other direct and indirect effects of ocean incinerator emissions on human health. Some scientists have suggested that under certain conditions, it is possible that such emissions may be caught up in air pockets and eventually find their way from the ocean to the land in their toxic form. Research is necessary to determine the likelihood of such an event and its impact on human health.

C. Shortcomings of the Draft Regulations

In light of the significant uncertainties associated with incinerator technology and the impact of emissions on the marine environment and human health, several provisions of EPA's draft regulations are inappropriate.

First, EPA proposes a ten-year permit period. The three-year permit period under existing Ocean Dumping Act regulations more appropriately reflects the need to address outstanding scientific and technical questions. We can expect that over the next few years, as research continues, we will have a better understanding of the effectiveness and impact of this technology.

Second, EPA has proposed a two-phase operating permit scheme in which a trial burn permit and operating permit are issued simultaneously (234.52 and 234.53). This procedure would replace the practice under the existing regulations where a research permit (equivalent of the trial permit under draft regulations) is issued separate from and prior to an operating permit. The existing practice is far preferable because an operating permit should be issued only after performance standards have been demonstrated. Under EPA's draft regulations, if a permittee is issued a two-phase operating permit and the incinerator does not perform satisfactorily during the trial burn phase, it will be necessary to revoke the operating permit, since by the combined permit issuance the permittee is deemed to have acquired a vested right. Granting an operational permit, before the capability to properly perform the necessary tasks has been demonstrated, makes little sense.

Third, issuance of a separate permit for the purpose of system testing is warranted. However, EPA's draft regulations require the permittee to test only one incinerator during its trial burn as a basis for assessing the entire system. (234.53 (b)) Incinerators with the same construction and design features will not necessarily perform identically. Each incinerator needs to be tested individually. The LDC requires extensive system testing, which by normal standards would require testing of each incinerator. (LDC, Incineration Regulation 3).

Fourth, in designating new ocean incineration sites under 234.77, EPA proposes to calculate the carrying capacity of the site or to establish loading rates as a means for establishing site use limits. Due to uncertainties about the long term effects of incineration emissions on the marine environment, and absent information concerning the validity of a carrying capacity calculation, EPA should not rely solely on those measurements to determine when a site is no longer suitable for incineration activities. Other activities in the area could also effect that calculation.

Extensive environmental monitoring should be undertaken as an ongoing process to validate the carrying capacity standard that has been set. Carrying capacity determinations are not an adequate substitute for careful and continuous monitoring and data collection once a site has been designated. If monitoring indicates that incineration is adversely changing the physical, chemical or biological characteristics of the site, then the Agency should limit or prohibit its further use -- whether or not the established carrying capacity limit or loading rate has been exceeded.

Ocean incineration should not be permitted in non-designated sites for the purpose of research burns or emergency burns, as EPA appears to propose in Section 234.77 of the draft regulations. It is especially inappropriate for the site designation process to be circumvented for research burns, where collection of site specific benchmark data and other information provided by an EIS is an essential precondition to effective research.

In addition, the draft regulations appear to allow research burns to take place in non-designated sites when old incinerator vessel technology is used to conduct the burns, but limits research burns to designated sites when new incinerator technology is employed (234.77 (a)(4)). This distinction is unreasonable given the similar purpose of all research burns to gather information on environmental effects. In order to adequately make such an assessment it is necessary to have the kinds of benchmark information about that site that would be made available only through a formal designation procedure. The age and kind of incinerator technology being used under a research permit should not determine the nature of the siting for that burn. All incineration burns should be limited to designated sites in order to safeguard adequately sensitive areas of the marine environment. EPA's draft regulations should be modified accordingly.

IV. Other Issues

In addition to the legal and technical concerns already discussed, the Oceanic Society is also disturbed by the potential for spills of hazardous wastes and problems of enforcement associated with incineration at sea.

A. Spills

Whereas the effects from incinerator emissions are difficult, if not impossible, to trace from the source, and may not be apparent for many years, the impact from a spill of hazardous waste, whether on land or at sea, will be felt immediately. Scientists do not fully understand the effects of emissions on marine biota and humans, but the effects of PCBs and dioxins on marine life and humans is common knowledge. Even less toxic substances than these (such as oil) are known to cause adverse effects in the marine environment. In the vicinity of such a spill, the damage is likely to be great, in terms of the devastation caused to marine life, and impact on other uses of the area, such as recreation and fishing. The effects of such a spill will be felt in economic terms on land, through public rejection of the services and goods offered by the tourist and fishing industries in and around the impacted area.

Industry claims that no casualties or spills have occurred on the North Sea as a result of incineration operations. Unfortunately, these operations were not monitored by an independent shiprider, and it would be more accurate to say that no reported spills have occurred on the North Sea.

EPA's OPPE study concludes that spills from the "Vulcanus" vessel would be very infrequent -- about one per 1,200 operating years.* This claim is based on projection rather than experience because, statistically, "not enough incineration voyages have been made to establish a meaningful safety record."** This projection is based on casualty and spill data assembled for other types of tank ships. Significant adjustments were made to the data, however, based on estimates of how the operating and design characteristics of the Vulcanus are likely to affect casualty and spill rates. The contractors who conducted this study warn that these casualty and spills rates "should not be viewed as precise measures of these rates because of uncertainties in assessing how the casualty and spill rates of incineration ships may differ from the rates observed for tank ships in general."[*]

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*EPA Office of Policy, Planning and Evaluation, "Assessment of Incineration as a Treatment Method for Liquid Hazardous Wastes -- Summary and Conclusions," March, 1985, p. 17.

**Office of Policy, Planning and Evaluation, "Background Report IV: Comparison of Risks from Land-Based and Ocean-Based Incineration, March, 1985, Appendix C, p. 1.

It is interesting to note that adjustments to the data were made according to operating and design features, whereas technical malfunctions and human error are widely recognized as the foremost causes of casualty and spill incidents. Had adjustments been made on the data based upon personnel training or other features that would minimize the existence of human error, such adjustments would appear to be more appropriate.

We derive little comfort from the conclusion that pier and coastal areas have the highest expected spill rate -- about 70% of spills would be expected to occur in those areas. These are high use areas for both humans and marine organisms, and the impacts of such a spill would be dramatically felt.

Given the highly discretionary nature of the estimates made, we seriously question the validity of the OPPE conclusions as an accurate reflection of spill projections. Time and time again, experience has shown the sea to be an unpredictable and often ruthless environment. The public knows from experience that casualties and spills at sea are not uncommon, and we have no reason to believe that the Vulcanus, or any other ship, is free from human error, technical malfunction or the unpredictability of the marine environment.

Of great significance is the fact that both Coast Guard and EPA officials have publicly acknowledged that clean up of a spill at sea is virtually impossible outside of enclosed areas or shallow waters. Our inability to respond to a spill at sea is a significant factor which must be adequately accounted for in any comparative risk assessment. Yet, this factor has been entirely ignored in OPPE's risk assessment of land versus ocean incineration.

B. Enforcement

Enforcement of permit and other requirements is a much more difficult task on a vessel stationed 120 miles off shore than on any land-based facility. Unannounced inspections and frequent monitoring of operations are not likely to occur as often at sea. EPA has addressed this concern in the draft regulations by providing for an onboard shiprider who would monitor the operation of the incineration and has the authority to stop the flow of the waste into the incinerator in the event a permit requirement is not being met or continuing the burn poses an unreasonable risk to human health, welfare or the environment (234.62). We support the provision requiring onboard shipriders as this appears to be the only way to enforce the regulatory standards.

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[*] _Id_. at 1-2.

However, if burns are to be continuous on these ships, so too should the monitoring of operations and we recommend that more than one shiprider (preferably three -- to work in 8 hour shifts) be employed on each voyage. In addition to allowing for continuous monitoring of operations, the presence of more than one shiprider should help the shipriders to maintain an independent presence.

V. Conclusion

Many of the legal and technical concerns that we have raised are addressed in legislation currently pending before Congress. Legislation introduced by Representative Boxer in the House (H.R. 1295) and Senator Cranston in the Senate (S. 1039) would require that research be done to determine the impacts of incineration on the marine environment and human health. In addition, EPA would be required to develop a national hazardous waste reduction and management plan to assist the agency and the public in making responsible decisions with regard to management of hazardous waste.

Given EPA's apparent eagerness to pursue ocean incineration in the face of overwhelming uncertainty, legislative action may be needed to ensure that the important legal and technical issues are resolved prior to issuance of ocean incineration permits.

Too often we assume that humans can manipulate nature and its balances indefinitely and infinitely, in order to accomplish ends thought to be desirable. As we have seen with some toxic waste burial on land, for example, that attitude comes back to haunt us as the interrelated problems become more and more serious. We must better understand and act with appropriate respect for the linkages in our natural systems -- linkages within and among our oceans, fresh water, land and air, and their living and non-living resources. While the oceans contain only part of the elements in that linkage, it is a critical role that must not be ignored. It is essential that we protect, conserve and use wisely the resources of our oceans. Based on the concerns we have identified in relation to incineration at sea, EPA's proposed program fails to meet that test.

Thank you for the opportunity to present the Oceanic Society's views. We look forward to continued involvement in the effort to resolve the issues that are outstanding.

APPENDIX 1

coast alliance

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OCEAN INCINERATION POLICY STATEMENT

The Coast Alliance recognizes that the management of hazardous wastes is one of the most difficult environmental issues facing the nation. The contamination of groundwater from landfills coupled with the increasing amounts of these wastes necessitates that the federal government develop long-term strategies for both safe treatment and disposal as well as a significant reduction in the waste stream.

The disposal of these wastes by high temperature incineration onboard specially designed incineration vessels working off our coasts seems to be a preferred interim solution to this problem by the Environmental Protection Agency (EPA). The agency has recently promulgated draft regulations with the intent to issue the first operational ocean incineration permits by the end of the year.

In addition, EPA has already designated one site in the Gulf of Mexico with sites off the West and East coasts soon to follow. Already, citizen opposition in the Gulf of Mexico has been instrumental in slowing EPA's headlong rush to aid in the development of this industry.

The Coast Alliance is opposed to the establishment of a domestic ocean incineration industry at this time for the following reasons:

1. Ocean incineration, rather than being a safe solution to hazardous waste management, at the very best represents the transfer of existing risks onshore to coastal communities and offshore environments. Both large spills and chronic small releases of toxic substances in sensitive coastal and offshore habitats could cause devastating and long-term damage. Many of the substances proposed for incineration would either disperse in the water column or sink to the bottom, making cleanup virtually impossible. Biological uptake of these substances, many of which concentrate in animal tissues, could spread the effects from localized species to highly migratory species.

2. The actual operation of a vessel mounted incinerator poses potentially serious risks to the human and marine environment. Because of limitations imposed by the vessel size and stability problems, the technology increases the risk of pollutants being discharge into the air and surrounding waters. The potential sites on the three coasts are known to experience fierce storm conditions and unpredictable weather. Scientists have admitted that the effects of long term exposure to these toxic emissions is largely unknown, both on the flora and fauna of the nearby marine environment. Large numbers of citizens in coastal communities have expressed concern for health effects should prevailing winds blow stack plumes onshore.

3. Viable alternatives to ocean incineration, other than landfill disposal, are available to industry. On site treatment, recycling, or destruction in highly efficient land incinerators are viable options currently available. In the near future, portable ultra high temperature destruction facilities and second generation super incinerators will be added to the list. EPA should be concentrating its efforts on reducing the amount of waste which leaves the plants, not devoting its resources to a capital-intensive technology which will cause a further increase in the amount of waste moving over the nation's roads.

* Statement adopted at the April 23, 1985, Coast Alliance Board Meeting.

THE OCEANIC SOCIETY

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July 16, 1985

Senator Lloyd Bentsen
Committee on Environment and Public Works
Washington, D.C. 20510

Re: June 19, 1985 Hearing on Ocean Incineration

Dear Senator Bentsen:

I appreciated the opportunity to appear before the Subcommittee on Environmental Pollution to present testimony concerning ocean incineration. In response to your June 14, 1985 letter, the Oceanic Society has prepared the following responses to the written questions you have submitted.

1. How extensively is incineration at sea in use in Europe, and are there sites other than the one in the North Sea under consideration?

Response: To the best of our knowledge there are three operational incineration vessels today, i.e., M/Ts Vulcanus I, Vulcanus II and Vesta.* We have not verified, however, that all three vessels are currently in use in the North Sea. The first two vessels are operated by Ocean Combustion Services, a subsidiary of Chemical Waste Management, Oakbrook, Ill., U.S.A. The Vesta is owned and operated by Lehnkering Montan Transport AG, Federal Republic of Germany. Operations in the North Sea take place within a well defined circular area with a radius of 15 nautical miles. The closest coastal areas are approximately 70 nautical miles away. This is the only permitted area in the North Sea, although in case of bad weather conditions an auxiliary area closer to the coast may be used. To the best of our knowledge, no other sites are being considered in the North

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* European Council of Chemical Manufacturers' Federations, "Incineration at Sea, History, state of the art and outlook," submitted to the Scientific Group on Dumping, 8th Meeting, 11-15 March, 1985, Agenda Item 7, LDC/SG.8/INF.7, p. 4.

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Sea. However, as indicated below, Japan has incinerated oily sludges in the Pacific and Japanese inland waters as well.

The International Maritime Organization, which oversees implementation of the London Dumping Convention, publishes reports on dumping permits issued. Its most recent report -- dated 20 December 1984 -- provides information on permits issued in 1982.* ATTACHMENT A 1/ is an excerpt from that report which provides information on special permits issued in 1982 for incineration at sea. That report indicates that close to 130,000 metric tons of waste (primarily organohalogen waste) were incinerated at sea in 1982. Close to 5000 metric tons of vinyl chloride monomer and PCB wastes were incinerated in an unspecified location en route from Australia to Singapore. One hundred eleven metric tons of oily sludges were incinerated in the Pacific Ocean, and 1377 metric tons of oily sludges were incinerated in inland Japan.

A recent survey of contracting parties to the Oslo Convention projects the generation of approximately 123,000 metric tons per year of incinerable waste by the Netherlands, Sweden, the United Kingdom, the Federal Republic of Germany, and Belgium. As indicated below, however, not all of these wastes are slated for incineration at sea. In this regard it is interesting to note that EPA's proposal to operate a minimum of three incinerator ships -- with the capacity to incinerate approximately 250,000 metric tons of incinerable waste per year -- would more than double the amount of wastes currently incinerated at sea on a global scale.

> -- Have there been any documented incidents of any spills, leaks or other accidents associated with European burns?

Response: Incidents of spills, leaks or other accidents in the North Sea have generally not been well documented. At present, virtually no enforcement measures are in place to carefully monitor incineration activities in the North Sea. The London Dumping Convention does not require the presence of shipriders on board the vessels to report incidents of spills, leaks or other accidents, as is proposed in the U.S. draft regulations. There are two instances, however, where incidents have been documented.

In June 1981 the Certificate of Approval for operation of the Vulcanus I, issued by the Netherlands' authorities, was withdrawn because of leaking cargo tanks. To gain entry to a shipyard to repair the leaking tanks it was necessary to first clean them. The owner of the ship ignored the Netherlands' request to conduct cleaning operations under surveillance of a representative of a competent authority of a contracting party to the London Dumping Convention. This incident was reported to the Scientific Group on Dumping (SGD) at its 7th meeting on 24-28 October 1983.[*] The Netherlands submitted a draft resolution to the SGD at its 8th meeting on 11-15 March 1985 which proposes to impose controls on cleaning operations carried out on board incineration vessels at sea.[**] The SGD has submitted that resolution for consideration at the Ninth Consultative Meeting of the LDC, to be held in September, 1985.[***]

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* IMO, " Consideration of Report on Dumping, Draft report of permits issued in 1982," Scientific Group on Dumping, 8th meeting, 11-15 March, 1985, Agenda Item 9, LDC/SG.8/INF.3.

1/ Retained in committee files.

Another well documented incident of a spill occurred in relation to the December 20, 1981 to January 4, 1982 PCB research burn in the Gulf of Mexico. This incident was reported by the project engineer as follows[****]:

> On December 29, a very small leak from a rapid closing (Plieger) cargo valve was noted. The resulting spill on the deck was very small, amounting to perhaps a few ounces. The leaking valve was removed, and a blank cover bolted to the flange. The deck was scrubbed with gasoil, followed by detergent solution and then rinsed with seawater.

Another EPA report documenting the results of this same burn indicated that more than one spill occurred on deck and revealed that contamination of parts of the deck were to be expected[*****]:

> Wipe samples were taken daily to monitor the cleanliness of the "clean zones" on board, to measure the level of contamination of "dirty zones" on board, and to measure the effect of cleaning operations.
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> * * *
>
> As expected, traces of compounds were already present on the ship. Contamination of the area during incineration was measured against the existing "background" concentrations of compounds. The results of the safety monitoring indicated that the "clean zones"

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[*] LDC/SG.7/10/5, p. 2. See, ATTACHMENT B, herein. 1/

[**] LDC/SG.8/7/3/Add.1, See, ATTACHMENT C, herein. 1/

[***] Report of the Working Group on Incineration at Sea, Scientific Group on Dumping, 8th Meeting, 11-15 March 1985, p.2.

[****] D.G.Ackerman, Ph.D., "Observations During the First PCB Research Burn," February, 1982, Attachment 1, p.3. No mention is made of the fate of the cleaning residue. Was it subsequently incinerated or dumped overboard?

[*****] United States EPA, "Preliminary Report, Research Permit for Incineration at Sea of PCB Wastes, HQ 81-002, Results of Test Burn on M/T Vulcanus," May 20, 1982, p. 57.

1/ Retained in committee files.

on the ship remained in the state they were before this operation. However, there was evidence of contamination of the burner room, pumproom and the gangway located on the starboard side from the burner room to the main deck. Small spills on deck were cleaned successfully and the gangway on the starboard side was cleaned thoroughly.

It has been stated by others that in 1977, the Vulcanus I was barred from the port of Emden, Germany because of toxic contaminated bilge water.* In relation to this incident, it has been alleged that the contaminated bilge water was dumped at sea. The Oceanic Society has not verified this incident.

On the basis of the Dutch experience and the first PCB burn in the Gulf, statements by industry representatives that operations have been free of leaks or spills is exaggerated. Again, absent enforcement mechanisms, it is impossible to accurately reflect the incidence of spills, leaks or other accidents.

2. What events have persuaded Europeans to consider termination of ocean incineration?

Response: As indicated in my written testimony to this Subcommittee, incineration at sea has always been characterized internationally as an "interim" technology for dealing with hazardous waste -- to be used until better (more environmentally sound) solutions can be implemented. Incineration at sea has been defined as ocean dumping, which is not considered to be a preferable means for waste disposal. Europeans have never expected to continue the practice of ocean incineration forever, but rather expected to terminate its use as soon as better solutions become available. The idea of terminating ocean incineration is therefore not a new one.

Certain events appear to have accelerated European interest in finding alternatives to ocean incineration. Concern with the environmental effects of ocean dumping (including incineration) has generally grown over the years, and questions specifically about the effectiveness of incineration technology have also arisen.** These findings, coupled with growing awareness of the enormous degradation of the North Sea due to the cumulative impacts from a variety of pollution sources, have likely led

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* Greenpeace U.S.A., "Ocean Incineration of Toxic Waste Chronology," (1985).

** IMO Secretariat, "Incineration at Sea, The formation of flourosilicon compounds in stack emissions," LDC/SG.7/10/3, 12 August 1983. In commenting on the results of a research burn aboard the Vulcanus, the Secretariat states that "[t]he presence of volatile organic compounds (sic) butane, benzene, etc. in the emission sample indicates inefficient combustion." (ANNEX, p. 1).

Europeans to seriously question incineration at sea as an environmentally sound waste management strategy.

For example, in a report drawn up on behalf of the Committee on the Environment, Public Health and Consumer Protection of the European Parliament on the combating of pollution in the North Sea, Document 1-1173/83, 19 December 1983, atmospheric pollution of the North Sea is attributed in part to incineration at sea (p. 19) and ash residue from incinerator ships which is dumped into the sea is also charged with contributing to pollution of the North Sea (p. 26):

> 4.7.1 Some chemicals, e.g. organochlorines, cannot be dumped at sea because of international conventions (see 5.1) and are incinerated at very high temperatures (1,200 C) at sea. Special ships sailing in the central North Sea can reduce the waste with an efficiency of 99.99%, releasing it into the atmosphere as carbon dioxide and hydrochloric acid. The ash is deposited in the sea. About 100,000 tonnes of dangerous liquid waste is disposed of at sea each year by this method.
>
> 4.7.2 Although this incineration is intended to restrict the damage to the environment it is not totally effective. Hydrochloric acid, for example, may be carried by the wind and deposited on coasts or in the Wadden Sea area. At the same time about 0.01% of these very dangerous waste substances are not incinerated and escape into the marine environment. The amount involved comes to about ten tonnes of very dangerous material. (Emphasis added).

Europeans clearly recognize that incineration at sea activities contribute to pollution of the ocean and the atmosphere.

Of equal significance, however, is the availability of alternative solutions to hazardous waste disposal, including reduction, recycling and other thermal destruction methodologies. The growing availability of such alternatives appears to have convinced many European countries that, in the near future, there is no longer the need to rely upon incineration at sea to dispose of hazardous waste. (See Response to Question 3, below).

3. Are the Europeans on schedule for phasing out ocean incineration?

Response: As noted in my written testimony to the Subcommittee, under the Oslo Convention, the contracting parties have agreed to meet before January 1, 1990 to set a date for phasing out ocean incineration. This agreement has generally been interpreted by the contracting parties and others to mean that the parties intend to phase out ocean incineration by that date at the latest.

At the last meeting of the Oslo Convention's Standing Advisory Committee for Scientific Advice (19 - 22 March 1985), the Netherlands submitted the results of a survey of contracting parties taken to determine availability of alternative means for disposal of chlorinated waste "to form a basis of an extended policy analysis to be made by the Oslo Commission of the situation concerning the disposal of organochlorine wastes."* The preparation of this survey demonstrates the desire of the Contracting Parties to the Oslo Convention to accurately determine a realistic date for termination of incineration at sea activities. These efforts appear to be the first step toward establishing the date for termination of this activity. The Oslo Commission met from June 11-13, but we have not yet been informed as to the results of that meeting. We will keep the Subcommittee apprised of further developments in relation to Oslo Convention initiatives on incineration at sea as information becomes available.

-- How will they accommodate the waste material currently being incinerated?

Response: The Oslo Commission survey referred to above indicates that a wide range of reduction, recycling, treatment and destruction techniques are being employed to handle the waste material previously incinerated at sea. Such processes "aimed at the useful application of wastes,"** include solvent recovery by distillation, perchloration and destruction of chlorinated waste and recycling of HCl. The Netherlands expects a sharp decrease in amounts incinerated at sea as a result of***:

-investigations aiming at a reduction of the amount of waste to be produced;
-the application of distillation and recycling techniques;
-the use of an incineration plant which will come into operation in the course of 1987.

Similarly, the Federal Republic of Germany attributes its expected sharp decreases in amounts incinerated at sea (especially highly chlorinated wastes) to****:

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* The Netherlands, "Alternative Means of Disposal For Organochlorine Wastes," presented at the Twelfth Meeting of the Standing Advisory Committee for Scientific Advice, Hamburg, 19 - 22 March 1985, p. 1. See ATTACHMENT D.1/

** Id. at Table 4.

*** Id. at 3.

**** Id. at 3.

1/ Retained in committee files.

-the construction of a special land-based incineration installation to be used by one big chemical company for its own purpose, from 1987 onwards (this entails a decrease of approximately 17,000 tonnes of waste to be incinerated at sea);
-the application of perchlorination (this entails the decrease of 3,000 - 5,000 tonnes of wastes to be incinerated at sea);
-development of further possibilities for reuse (this entails the decrease of 10,000 - 20,000 tonnes of waste to be incinerated at sea).

Belgium expects the operation of new treatment facilities to result in a decrease in wastes to be incinerated at sea by 1988. Sweden currently does not incinerate wastes at sea, opting for a land-based facility called "Akzo". The Oceanic Society is awaiting a response to inquiries regarding the nature of this facility. We will provide that information to the Subcommittee when it becomes available.

4. Why, in your opinion, does the hazardous waste industry appear to have a poor record of compliance with environmental laws?

Response: The Oceanic Society generally has not commented upon the compliance record of the hazardous waste industry.

In our response to Question #1, we have referred to the refusal of one ocean incinerator to conduct cleaning operations under supervision (as documented in ATTACHMENT B)[1/]- indicating an insensitivity to environmental concerns absent legal imperatives.

We also recognize the existence of other irregularities in the conduct of one or more of the potential ocean incinerators which have been documented in the media and public information. EPA fines have been imposed in some instances for violations of permit or other regulatory requirements.*

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* For example, as a result of charges of improper handling of PCB's, from 1980 to 1983, at Chemical Waste Management's facility in Vickery Ohio, EPA sought a $6.8 million fine. A settlement agreement reached on April 5, 1985 lowered the fine to $2.8 million. (Information based on telephone conversation between Sally Lentz of the Oceanic Society and Mike Walker of U.S. E.P.A. Enforcement Division on July 15, 1985). The Ohio EPA reportedly required the company to expend $10 million for remedial work for the same offense. The company also reportedly agreed to pay $1.05 million in fines for alleged violations in its storage of PCB's at a landfill in Emelle, Alabama. See, Shipp, "In Chicago, E.P.A. Accuses and is Accused on Wastes," N.Y. Times, Jan. 25, 1985, at A10; and Blumenthal, "A Waste Hauler Under the Gun," N.Y. Times, Nov. 25, 1984 at 4F.

1/ Retained in committee files.

The limited ocean incineration activities which have taken place in the U.S. have not been conducted without irregularity. For example, in relation to ocean incineration activities, one EPA permitted test burn has aroused concerns with respect to the suspicious last minute permit change that allowed the burning of dioxin contaminated waste, not originally proposed in the permit. This change was made without opportunity for public comment. In a December 20, 1983 Memorandum from EPA's Inspector General to Jack Ravan, then Assistant Administrator for Water, this irregularity was acknowledged:

> Significant changes were made in the language of this permit after the public notification period expired. However, there was no subsequent public notification of such changes. One such change allowed the legal, although according to CWM inadvertent, incineration of highly toxic dioxin laden wastes not intended by EPA to be incinerated. EPA officials involved could not explain or provide any documentation to show who had made this change, or when and why it was made.

The Oceanic Society believes that any permit holder stands in a position of public trust to deal safely and responsibly with materials that could harm human life and the environment. On this basis alone, we believe that a full evaluation of the applicant's integrity is critical to ensuring that only responsible applicants will be granted a permit. The proposed nature of an integrity review is discussed in the Oceanic Society's coalition comments on EPA's draft regulations, (hereinafter, referred to as Joint Comments), previously submitted as part of this hearing record.*

As a basis for its preliminary refusal to include integrity as a factor for consideration in assessing an ocean incineration permit application, EPA claims that equitable criteria are impossible to develop.** EPA's claim is unjustified, given the routine application of this factor in many state and federal laws for issuance of a variety of permits and licenses.* As these state and federal laws demonstrate, applicant integrity or character is assessed for permitting activities that involve a lesser degree of public trust and a lower risk of adverse impact than does ocean incineration.**

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* "Joint Comments of Environmental and Other Citizen Organizations in Response to the U.S. Environmental Protection Agency's Draft Regulations on Ocean Incineration," prepared by the Oceanic Society, June 28, 1985, pp. 50-57.

** 50 Fed. Reg. 8222 (1985) at 8248.

5. Does your organization believe that there is a role for ocean incineration in a national waste management strategy?

The Oceanic Society generally subscribes to a hierarchy of hazardous waste management options that gives greatest priority to reducing the generation of waste, followed by recovery of waste for recycling, treatment to reduce or eliminate waste toxicity, isolation and containment, with dispersion (direct discharge into the environment) having the lowest priority.

Incineration at sea includes elements of both treatment and dispersion. The process treats some portion of the waste, but the remainder is dispersed directly into the environment through stack emissions or the discharge of scrubber effluent directly into the water. Because dispersion has lowest priority in our hierarchy, to the degree feasible, other options should be utilized in preference to this technology.

The Oceanic Society is concerned about (1) the numerous uncertainties associated with the effectiveness of the incineration process and its impacts on human health and the marine environment; (2) EPA's failure to demonstrate a need for ocean incineration; (3) the failure of EPA's draft regulations to adequately address national and international legal imperatives; (4) EPA's failure to require the use of "best available technology" for ocean incineration; (5) the failure of EPA to adequately and consistently incorporate other domestic statutory and regulatory requirements in its regulations; and (6) the failure of EPA to prepare and environmental impact statement in relation to its draft regulations. These and many other concerns are discussed in detail in the Joint Comments referred to above. (See, Note * on page 7).

If the principal concerns raised in relation to EPA's draft regulations are met, the Oceanic Society believes that incineration at sea has the potential to serve as an effective (though bottom tier of the waste management hierarchy) waste disposal complement to source reduction, destruction, detoxification, reclamation and reuse, along with other disposal strategies. As suggested in our Joint Comments, however, these concerns have not yet been addressed.

6. Do you believe that incineration in the Gulf could be made

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* Id.

** Id.

acceptable if more stringent permitting requirements were put in place?

Response: The Oceanic Society believes that more stringent permitting requirements alone will not make ocean incineration more acceptable in the Gulf or any other location. Appropriate permit requirements must be based upon a sound understanding of the incineration process and its impacts on the marine environment and human health. EPA's Science Advisory Board Report demonstrates that we have yet to achieve that degree of understanding that will enable us to responsibly set criteria for regulating this activity. The information upon which more stringent permitting requirements can be established simply is not available at this time.

In addition to implementing more stringent permit requirements and the difficulty in establishing those requirements at this time, other concerns, enumerated in our response to Question 5 and discussed more fully in our Joint Comments and our statement submitted for the hearing record, must also be resolved before incineration is conducted in the Gulf of Mexico.

Further, questions have also been raised about the particular suitability of the Gulf of Mexico site. The semi-enclosed nature of the Gulf, the high level of vessel traffic that takes place in and around the Gulf incineration site*, the impact of spills in the area, and the threats posed by incineration to the viability of the Gulf fisheries**, are all factors that must be carefully weighed in assessing the suitability of the Gulf for incineration activities. The environmental impact statement prepared by EPA on the Gulf incineration site in 1976 falls short of adequately addressing these and other important issues. Therefore, even if more stringent permitting requirements are put in place, the Gulf of Mexico, or the specific site which has been designated in the Gulf, may not in fact be an appropriate location for incineration at sea.

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* Two shipping routes to points outside the Gulf and two shipping routes within the Gulf run directly through the Gulf incineration site. In addition, a major artery of shipping routes within the Gulf is located directly adjacent to the Gulf incineration site. See, NOAA, "Gulf of Mexico Coastal and Ocean Zones Strategic Assessment: Data Atlas," February 1985, pp. 4.27 and 4.28.

** The Gulf incineration site lies within an adult area for blue runner, yellowfin tuna, blackfin tuna, bluefin tuna, swordfish, dolphin, fin whale and marlin. Spawning for most of these species occurs throughout the adult area. A nursery area for crevalle jack is located in the Gulf incineration site, and a recreational fishing ground for marlin is located immediately adjacent to that site. Id., pp. 3.30, 3.31, 3.34, 3.53 - 3.56, 3.58, and 3.71.

* * *

We hope that the above responses to your questions are helpful. If you or your staff have any further questions or desire additional information, please let us know. We look forward to working with you on this important environmental issue.

Sincerely,

Sally Ann Lentz

Sally Ann Lentz
Staff Attorney

AMERICAN LITTORAL SOCIETY
For The Study and Conservation of Aquatic Life
SANDY HOOK • HIGHLANDS, NEW JERSEY 07732 • 201-291-0055

July 9, 1985

The Honorable Lloyd Bentsen
United States Senate
Committee on Environment and Public Works
Washington, DC 20510

Dear Senator Bentsen:

Here are our answers to the ocean incineration questions you posed in your letter of June 24.

1. The American Littoral Society believes there is a role for ocean incineration in a national waste management strategy, and it should be kept open as an option. We believe there are real problems with the proposed EPA regulations, and we urge caution before adoption.

2. Our concerns over the Atlantic site are: Transportation to the site from either New York Harbor or Philadelphia which would entail threats to these estuaries; impact on the fisheries at the site from the by-products of combustion; and the use of densely populated areas (again Philadelphia and the metropolitan New York/New Jersey area) for toxic waste collection, storage, and mixing before transport to sea. (Underlying these concerns is our lack of confidence in the skill and motivation of the at-sea burners presently vying for permits).

3. I do not know enough marine biology to answer question 3, about the potential damage to fishing except to say that the perception of the purity of landings from the Mid-Atlantic fishery will suffer damage if another toxic/waste burn or dump operation is located in nearby ocean waters.

Thank you for the chance to comment.

Sincerely,

D. W. Bennett
Executive Director

Questions Submitted by Senator Lloyd Bentsen

1. Does your organization believe that there is a role for ocean incineration in a national waste management strategy?

2. What are your concerns regarding the proposed Atlantic site?

3. What potential damage to fishing is posed by permitting ocean incineration in the Atlantic?

Statement of

Howard R. Canter
Chairman and President
At-Sea Incineration, Inc.

on behalf of

At-Sea Incineration, Inc.
Port Newark, New Jersey

accompanied by

Lawrence J. O'Brien, Jr., Esquire
Kiernan & O'Brien, P.C.

before the

Subcommittee on Environmental Pollution

Committee on Environment and Public Works

United States Senate

Washington, D.C.

June 19, 1985

Good morning, Mr. Chairman and Members of the Subcommittee. I am Howard R. Canter, Chairman and President of At-Sea Incineration, Inc.; accompanying me is Mr. Lawrence J. O'Brien, Jr., our General Counsel.

I welcome the opportunity to speak to you about the issues surrounding the incineration of hazardous wastes at sea, a technology which has time-and-again been demonstrated to be "an environmentally acceptable and efficient means for the destruction of liquid organic hazardous wastes."

It has become increasingly evident that many land disposal methods generally do not provide a satisfactory solution to this Nation's hazardous waste disposal problems. Land emplacement options, such as landfills, surface impoundments, and injection wells, are really forms of long-term storage. Highly toxic liquid wastes stored in some landfills have shown a dangerous tendency for finding their way into groundwater systems and bodies of water. This is certainly the case in Denver, CO at the Lowry landfill and in my own state, New Jersey, at the Jackson Township landfill. Pollution incidents such as these are graphic examples of the major risks to human health and the environment that result from improper disposal methods.

In response to these concerns, you and your congressional colleagues, EPA and state agencies have placed stricter controls on land emplacement. Last fall Congress enacted the Hazardous and Solid Waste Act of 1984, the 1984 RCRA amendments. In this legislation, Congress declared a new national policy for hazardous waste:

> "(T)o avoid substantial risk to human health and the environment, reliance on land disposal should be minimized or eliminated, and land disposal, particularly landfill and surface impoundments, should be the least favored method for managing hazardous wastes..."

Thus, the will of Congress, representing the people of the United States, has been stated.

At a Congressional hearing on December 7, 1983, Assistant EPA Administrator (for Water) Jack Ravan committed to the development of revised and expanded U.S. regulations within one year (ie - by December 7, 1984). You are aware that U.S. regulations for disposing of waste at sea did exist in 40 CFR 220-228 and, under these regulations and the International Treaty, ocean incineration permits were issued for research that was conducted between 1974 and 1982. Under U.S. law, international rules are sufficient to issue commercial operating permits. EPA, however, decided to issue new stand-alone regulations in response, perhaps, more to political pressure than to technical or legal need.

Simultaneously, the Agency embarked on a comprehensive program to re-evaluate ocean incineration. (It should be noted here, that EPA extensively studied ocean incineration during a series of research burns conducted in American waters. Data developed between 1974-1980, together with European successes, were the base of the United States' Chemical Waste Incinerator Ship Program). Now, what have been the results of EPA's most recent studies?

First, EPA's Science Advisory Board studied the use of incineration as a hazardous waste disposal technology and concluded that no human health or environmental impact from ocean incineration has been detected. It is important to recognize that the SAB report also concluded that, while additional study of incineration should be undertaken, the technology should continue to be utilized to destroy hazardous wastes.

Second, EPA's Office of Policy, Planning and Evaluation, confirming a 1979 comparison of land and ocean-based incineration, found that ocean incineration is less risky to human health. The study also shows that, if the amendments to RCRA are properly implemented, the shortfall in commercial incineration capacity is estimated at 7½ times the existing capacity.

EPA has now developed its proposed ocean incineration regulations. This rule-making, which began in May 1984, was one of the most comprehensive activities of its kind and brought together industrial proponents, public interest groups, and representatives of local, state and federal government. Fifteen months after Mr. Ravan made his commitment, the proposal was presented for public comment and it will most likely be promulgated over one year late.

In 1982, critics of ocean incineration demanded that EPA develop U.S. regulations. But now, after EPA's diligent and time-consuming effort, these same critics would have you believe the Agency is rushing haphazardly to implement this hazardous waste destruction technology, a safe, proven method that has been in successful, commercial use for sixteen years.

But, what else has happened since 1983? This nation has produced an additional 350 to 400 million metric tons of hazardous waste. Regulations have gone into place which severely restrict the number of available, environmentally-appropriate land-disposal sites, and hundreds of sites have been added to the Superfund National Priority List.

How much longer can we fool the public into believing that strides are being made to protect their water supplies, their environment, their health and the health of their children? We have seen the results of improper hazardous waste management practices - Have we learned nothing from Love Canal and Times Beach?

Consensus has been expressed about the potential of a catastrophic accident befalling an ocean incinerator ship. There is that possibility, though because of the safety and navigation systems incorporated into our modern incineration ships that possibility is exceedingly remote.

Let us look at some facts. Hazardous wastes are defined as hazardous because of the dangers associated with the materials used in the processes from which they are generated. Yet, millions of tons of these hazardous raw materials routinely transit the ports and waterways of this nation each year. In 1982, for example, 138,000,000 tons transited the ports of the Delaware River-Delaware Bay, 106,000,000 came into the port of New York, 60,000,000 were shipped through the Houston Ship Channel, 26,000,000 transited the Port of Lake Charles, 5,000,000 the Port of Mobile. For comparison, the annual capacity of one of our ships is 120,000 metric tons, a small fraction of the total shipped in routine American maritime commerce.

Little credit is taken for the extremely low potential risks in America's shipping industry. There is, in fact, a significant technical distinction between bulk tankers bringing these materials to our shores and the incinerator ships, which have been designed to meet or exceed the requirements for Type II chemical tankers; standards which have met the test of time and experience, standards set and monitored by international authorities and, of course, the U.S. Coast Guard.

There is also a body of maritime laws and historical experience regarding liability in the event of an accident. Requirements for the preparation of contingency plans, the availability of emergency response teams through the Coast Guard and private contractors, the existence of legal procedures and precedents regarding liabflity - all exist and are in current, accepted national and international practice.

Mr. Chairman, I am confident that ocean incineration is an appropriate technology for destroying liquid organic hazardous wastes. The recently published reports by the Science Advisory Board and the EPA serve only to strengthen my confidence. In fairness, it must be said that there remains the need to increase our scientific knowledge of the incineration process. Both EPA and the SAB have recommended prompt implementation of research burns at sea designed to answer these questions about ocean incineration. We must move ahead with this testing. Our nation continues to generate a quarter of a billion tons of hazardous wastes each year and faces, imminently, an incineration capacity shortfall of 1.64 million tons a year.

Mr. Chairman, we already know the risks of inappropriate disposal methods. We have seen the human tragedies. In my own state there is a lagoon in Bridgeport, NJ with 3 million gallons of PCB-contaminated oil. The March National Geographic has a two page picture of it on pages 350 and 351. I want to drink neither oil-contaminated water or PCBs. How long can we wait?

The effectiveness of ocean incineration has been demonstrated time and again. The research recommended will confirm this historical data. Let us move ahead.

Thank you.

Supplemental Statement
of
Howard R. Canter
Chairman and President
At-Sea Incineration, Inc.

To the
Subcommittee on Environmental Pollution
Committee on Environment and Public Works
United States Senate
Washington, DC
June 25, 1985

Mr. Chairman and Members of the Subcommittee, I would like to take this opportunity to make the following additional comments:

Public Opinion

Several comments have been made concerning apparent public opposition to ocean incineration. In fact, several public interest groups as well as the Executive Director of the New Jersey Hazardous Waste Facilities Siting Commission stated that there was "solid citizen opposition."

Statistically valid samplings of the attitudes and opinions of a cross-section of the public indicate that ocean incineration is viewed by a majority of the population sampled as the preferred method of disposal of liquid hazardous waste. In November, 1984, RMH Research, Inc., of River Edge, New Jersey, conducted a survey of the citizens of the state of New Jersey. A copy of this survey and the results is attached for your information.* Of particular note is the fact that the citizens of New Jersey indicated a preferences for ocean incineration by a three-to-one majority and indicated opposition to even proper land disposal methods by as much as eight to one.

In addition, Hamilton and Staff of Chevy Chase, Maryland, conducted a survey of residents of Louisiana and the Texas Gulf Coast in April, 1985. A copy of this survey is also attached*and indicate results that are consistent with those found in New Jersey.

*Retained in committee files.

Location of Ocean Incineration Sites

Several comments have been made concerning the location of ocean incineration sites. In fact, some witnesses stated that if ocean incineration is so safe, why does it have to be done as much as 150 miles out to sea.

The fact is that ocean incineration does not have to be accomplished that far out to sea, nor does it have to be accomplished in extremely deep water. The incineration site used in the North Sea by several western European nations is approximately 70 miles from land and is in a depth of water as shallow as 40 meters. The selection of the sites is the responsibility of the EPA. The sites that have been chosen were selected taking into account numerous criteria including the marine environment at those locations, meteorological data, and the amount of other traffic.

Assessment of Need

In April, 1985, the EPA released a study that assessed the need for ocean incineration. This study considered the necessity for providing additional incineration capacity on a nationwide basis in order to curtail or stop those disposal practices used in the past that have been deemed to be unacceptable. Since disposal of hazardous waste is a nationwide problem, the EPA did not address the need on a state-by-state basis. However, they did address the needs of the nation in total and concluded that, if the RCRA amendments of 1984 are properly implemented, the shortfall in incineration capacity nationwide will be 7.5 times the existing capacity.

In testimony before the Subcommittee on Natural Resources, Agriculture Research, and Environment of the House Committee on Science and Technology, Dr. William D. Barnard of the Office of Technology Assessment confirmed the EPA's conclusions. In fact, the Office of Technology Assessment performed a forward-looking assessment of what liquid hazardous waste could be incinerated rather than a backward look at what has been done in the past. Their conclusions overwhelmingly support the need for adding ocean incineration to the nation's inventory of permanent hazardous waste disposal technologies.

High BTU Materials for Fuel in Land-Based Incinerators

A number of participants have indicated that high BTU liquids suitable for incineration at sea are actually needed as fuel for land-based incinerators where sludges and solids will be destroyed.

The facts are that the great majority of the liquid organic hazardous wastes suitable for ocean incineration have BTU contents too low to make them effective fuels for supporting combustion of solids and sludges in land-based incineration. Furthermore, the amount of liquid wastes that will be available for incineration in the United States is so large that there will be more than adequate liquid waste available for land-based incineration.

The Need for Scrubbers

Since ocean incineration vessels limit the waste to be incinerated to liquids only and furthermore limit certain constituents in those liquids, nearly complete destruction of the waste is accompished. There is essentially no particulate emission from the incinerator stacks.

If perfect combustion of a chlorinated hydrocarbon were achieved, the products of combustion would be carbon dioxide (CO_2), water vapor (H_20), and hydrochloric acid (HCL). In a land-based operation, whether it be an incinerator, a power plant, or an industrial boiler, scrubbers are often used to remove the acids such as HCL. This is because these products falling out on the downwind land mass build up with time and create undesirable effects.

In the case of ocean incineration, testing has demonstrated that the HCL is immediately neutralized when it comes in contact with seawater. Effectively, the products that are produced in the sea water are salts such as sodium chloride (table salt).

It is also of interest to note that there are some who are of the opinion that scrubbers may do more harm than good. For one reason, they tend to concentrate the materials into a scrubber liquid that then must be disposed of. In testimony before the Science Advisory Board in May, 1984, Mr. Sussman (the EPA official responsible for incineration technology) indicated a concern over whether scrubbers added more organics to the exhaust gases than they removed, and he further stated that scrubbers do not do a very good job of removing organics at all.

Shipowners' Liability

The concern expressed by the Attorney General of Texas over limitations on shipowners' liability in a worst case analysis and does not appear to have a full legal basis. The attached analysis of the Limitation of Shipowners' Liability Act* and the related legal precedents indicates that private parties should not be subjected to greater obstacles to recovery in a maritime tort case than in land-based claims.

Once again I would like to emphasize that ocean incineration has been demonstrated to be an effective, environmentally safe means of disposing of liquid hazardous waste. It has been used for 16 years. I am confident that we can move ahead with this technology and that the overriding benefits of permanently disposing of these hazardous materials far outweigh the concerns and small uncertainties that still remain.

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* Retained in committee files.

AT-SEA INCINERATION, INC. 400 Lanidex Plaza, Parsippany, N.J. 07054 (201) 884-9460

July 8, 1985

The Honorable Lloyd Bentsen
Committee on Environment and
  Public Works
Washington, DC 20036

Dear Senator Bentsen:

Thank you for your letter of June 24. Per your request, I am happy to respond to the questions submitted by Senator Lautenberg and you. I have taken the opportunity to append my responses with a variety of letters which I hope you will enter into the record.*

Should you have any questions, please contact me or Mr. John P. Sandstedt, Vice President of Governmental Affairs.

Sincerely,

AT-SEA INCINERATION, INC.

Howard R Canter
Howard R. Canter
Chairman and President

HRC:JJ

Attachments

* Retained in committee files.

Questions Submitted by Senator Bentsen

Question 1. When was At-Sea Incineration organized, and when did the company approach the Maritime Administration regarding loan guarantees?

--What are the terms of the loan guarantees?

--Were the Apollo I and II designed and constructed for the purpose of ocean incineration, or were they retrofitted?

In 1978, Global Marine Development, Inc., of Newport Beach, published a three volume report for the U.S. Department of Commerce entitled, A Study of the Economics and Environmental Viability of a U.S. Flag Toxic Chemical Incineration Ship. This study examined the history of ocean incineration in Europe and the research burns conducted in American waters aboard M/T Vulcanus, projecting incineration capacity requirements through 1989 and calculating capital, operating and incineration cost per ton in order to compare potential U.S. capability with both European ocean incineration experience and that of U.S. land-based incineration.

The founders of At-Sea Incineration, Inc. (ASI), working as a partnership established in 1979, determined that private enterprise was the most effecive mechanism to develop this innovative technoloty. At-Sea Incineration, Inc. was incorporated in the State of Delaware in February, 1980. A federal evaluation team comprised of the U.S. Environmental Protection Agency, the U.S. Maritime Administration, the U.S. Coast Guard and the National Bureau of Standards, concluded in a September 1980 report entitled, Report of the Interagency Ad Hoc Work Group for the Chemical Waste Incinerator Ship Program:

> . . . incineration at sea is an effective and environmentally acceptable technology and that an accelerated federal effort should be instituted to establish chemical waste incinerator ship capabilities in the United States.

At-Sea Incineration, Inc., engaged the naval architecture firm of J. J. McMullen and Associates to formalize its own design for these special purpose vessels. The ships were specifically designed as ocean incineration vessels, but can also serve as Type II bulk chemical tankers. The ships are being constructed by Tacoma Boatbuilding Company of Tacoma, WA.

Seventy-five percent of the cost of construction of the first two Apollo-class vessels is being financed under loan guarantee provisions of Title XI of the Merchant Marine Act of 1936, as amended, a program designed to foster American shipbuilding. This loan guarantee of $69.3 million is managed and administered by the Maritime Administration.

The original loan guarantee, approved in 1982, was awarded to the Apollo Company, LP (Apollo), a limited partnership formed for the purpose of financing and owning the Apollo ships. Its General Partner is Aeron Marine Shipping Company of Lake Success, New York, and there are a number of private investors.

The guarantee provides the security for bonds sold by Apollo Company, L.P. The remaining twenty-five percent of the cost of construction was raised by the general and limited partners in Apollo Company L.P., or provided by ASI. In order to approve the loan guarantee the vessel concepts and the economic soundness of the project were assessed and approved by MARAD. The General Accounting Office summarized the MARAD action as follows:

"a. MARAD considers the Apollo project to be legal and economically sound. (Letter committment, April 1982) 1/

b. Title XI can be used to finance chemical waste incinerators if they are "vessels." These ships are vessels, as defined by the Merchant Marine Act of 1936. Also, the two ships meet the following conditions:

    1. They are U.S. Flag with important National contributions (Interagency Board)
    2. Are highest priority--ocean-going
    3. Can serve as military/naval auxilliaries in time of need (Agent Orange, petroleum tankers)
    4. Can carry substantial (6000 MT Each) volume of cargo for U.S. trade and therefore can contribute to merchant maritime industry."

1/U.S. Coast Guard has approved the ship conceptual design and will have to approve crew members and proposed operations before disposal is permitted. Also, EPA has approved the proposed incinerator and will monitor incinerator operations. According to Apollo application, ships will not be built without MARAD backing.

In order to obtain the MARAD loan guarantees, Apollo and its principals, their venture, and its particulars were subjected to rigorous scrutiny by the U.S. Government and by the public securities markets. Approval, under the statute, pledges the full faith and credit of the U.S. Government in support of the Apollo-related bonds.

The General Accounting Office reviewed the loan guarantee committment in 1982 and concluded the following:

"a. We (GAO) have no basis to question the legality or economic soundness of this loan guarantee.

b. In the past, GAO has reviewed hazardous waste disposal. GAO concluded that:

--Adequate capacity is not available to handle increasing volumes of waste being generated and public opinion is impacting on development of new disposal facilities. (Dec. 19, 1978).

--Hazardous waste disposal on the land is the nation's predominant disposal method, resulting in potentially costly cleanup efforts and serious environmental problems."

The first of ASI's incineration vessels Apollo One was launched in February 1984 and will be delivered in July 1985. Apollo Two will be launched July 21, 1985, with delivery expected in December.

As a result of corporate restructuring, title to the Apollo vessels passed to At-Sea Incineration, Inc., on January 18, 1985. In consideration of this, the Apollo Company, LP owns a 30 percent interest in the company. MARAD had to approve the acquisition of Apollo's interest in the ships by ASI and the assumption of the guarantee obligations by ASI.

Question 2. SeaBurn Inc., is offering a different type of incinerator than that used on other incinerator vessels.

--What, in your view, are the comparative advantages and disadvantages of the two systems?

--Why has SeaBurn elected to equip their incinerators with scrubbers, while your company has not?

--Is there a difference in the longevity and burn effeciency of the two systems?

SeaBurn, Inc., has elected to install horizontal incinerators on board "an ocean-going vessel," which is, according to the Coast Guard, a towed barge. (The use of an incineration barge was rejected by ASI for safety and other considerations). It is believed that the vendor of the incinerators is the John Zink Company. The vertical incinerators on the Apollo vessels are manufactured by the Coen Company of Burlingame, CA.

Both the Coen and Zink incinerators are of the liquid injection type, in which liquid waste is pumped at high pressure through atomization nozzles to form tiny droplets, which can be efficiently burned. The incineration technology is similar, the geometry of the incineration chamber is different--with the vertical design being more appropriate for an incineration ship.

At-Sea Incineration designed its incineration system to meet the standards and requirements of the applicable laws and regulations that were adopted, both nationally and internationally, based on actual experience. Studies conducted in Europe and off the American coast have shown that because of dispersion of the stack emissions, the ocean is well able to assimilate the products of combustion, predominantly carbon dioxide, carbon monoxide, water and hydrogen chloride.

With regard to the use of scrubbers on ocean incineration vessels the Science Advisory Board has stated:

> ....Some new ocean incineration vessels under construction are designed to use sea water for scrubbing or quenching. The scrub water will entrain some combustion products and have the potential to form saturated solutions of hydrocarbons in water. If the scrub water is returned to the ocean, it will remain at the surface because it is warmer than the ambient sea water. Exposures to surface dwelling marine organisms (neuston) will occur at much higher concentrations of combustion products than through transfer of these products from the plume to the water surface...

Whether use of scrubbers is more or less environmentally appropriate must be assessed in specially conducted research on this "new technology." Such is considered in EPA proposed Ocean Incineration Regulations.

> . . . research might include the effect of incinerator emissions on the microlayer which is the thin layer of material at the air-sea interface, and verification of new and/or improved atmospheric models. Research permits would also be issued to investigate new incineration technologies . . .

The following table compares the two systems:

Table I

	Apollo Ships	SeaBurn "Vessels"
Land Transportation of liquid wastes	DOT-approved tank truck, railcar or barge	DOT-approved truck chassis assembly with containers
Collection	4.5 million gallon installed capacity, with facilities for analysis and blending (see attached description)	Assemble-144 containers at port site
Blending	To achieve "waste product" with optimum incineration characteristics	None
Loading	Pumping via direct pipe lines, hose connections. U.S. Coast Guard regulated.	Crane lift of containers
Vessel	Type II Chemical Tanker double hull, voids, cofferdam	Barge - with containers on deck
Incinerator	Coen - liquid injection vertical	Zink-liquid injection, horizontal, with sea water scrubber
Stack Gas Treatment	None required	Scrubbers
Disposal of residue	None	Injected into ocean behind vessel
Destruction and removal efficiency	99.99% incinerator alone	99.99% incinerator with scrubber

Question 3. Why, in your opinion, does the hazardous waste industry appear to have a poor record of compliance with environmental laws?

The nation's record regarding disposal of hazardous waste is poor, at best. It must be remembered, however, that many of these companies are descendants of garbage companies, that dumped solid wastes in a neaby vacant property. With the advent of stricter laws and regulations, better methods had to be established.

Today's hazardous waste industry is truly an infant, with many new companies, such as ASI, having been established after the adoption of RCRA regulations in 1980. These companies must fight the stigma of past practices, some of which were accepted and licensed by federal or state environmental officials.

The time has come for a more effective process to emerge--to educate the media, which jumps to portray the graphic horror stories, that attempts are being made to dispose of the nation's wastes properly.

Question 4. What planning has your company undertaken done to react to a worst-case scenario in the event of a major accident and spill at port, enroute to the site, and at the burn site?

--What cleanup methods exist?

--What tests of cleanup methods have you conducted?

--Are there companies offering emergency cleanup service?

--What effect will climatic variables have on your ability to mitigate the extent of damage and effect cleanup procedures?

The best defense against a major (or minor) accident that could result in a loss of hazardous material into the marine environment is to design a vessel equipped to minimize that potential. The attached graphic shows many of the systems on board the Apollo vessels to achieve this goal. These include:

- Separated cargo tanks
- Double hull construction
- Use of an inert gas blanketing system
- Twin, independent propulsion systems
- Independently powered bow thruster
- Redundant navigational and control systems

In addition, as part of ASI's application for its research permit a Contingency Plan was prepared and reviewed by the U.S. Coast Guard. This plan details the measures to be taken in the event of an accident.

Various cleanup methods exist for spills of materials, either heavier or lighter than water, in ports and waterways. And, any number of companies have the necessary equipment to effect prompt, efficient cleanup. Two such companies are Malone Marine Service and Marine Maintenance Company of Texas.

Literature on Marine Pollution Control, another company is attached.

Question 5. If ocean incineration permitting were unavailable for several years or EPA determined not to issue permits at all, what would be the consequences for your company?

--Would the company look for markets outside the U.S.?

--Is there a possibility of default on the loans?

--What are the provisions in the loan guarantee in this event?

Obviously, the Apollo incinerator ships must begin to operate in order to generate the revenues to begin retirement of the financial obligation secured by the Title XI loan guarantee. At-Sea Incineration is exploring the foreign market as part of its business strategy; the suggested delay would cause initiation of foreign activity earlier than had been anticipated.

The operation of an ocean incineration ship is regulated by an international treaty, the London Dumping Convention (LDC), which requires member nations (contracting parties) to establish systems to control the transport and disposal of hazardous wastes leaving their shores. As part of the LDC, member nations adopted regulations and technical guidelines to be considered when issuing permits for incineration at sea.

Under the rules, permits are issued:

(a) by the member nation, where wastes originate or are loaded in its territory, or

(b) by the flag nation of the incinerator ship, when the wastes originate or loading occurs in a nation not party to the LDC.

Simply put, the nation where the waste is loaded must be a contracting party and must regulate the licensing process or the United States (in the case of ASI's ships) will assume that role.

There are no constraints imposed on foreign operations by provisions of the loan guarantee.

Default on the Title XI loan guarantee is very unlikely provided the EPA does not delay the program significantly. In the unlikely event of default, the Maritime Administration has several options under the statute ie. to either recall the bonds and pay the debt or to develop an appropriate work out program as authorized by law.

Question 6. What do you recommend as appropriate liability insurance requirements for cleanup and repair? What kind of protection do you think should be provided for third parties whose livelihood is damaged if an accident occurs, even though they are not physically damaged?

As shown by EPA's comparison of the volume of hazardous material transiting the Gulf of Mexico (U.S. ports) and the annual capacity of an incinerator ship, it is obvious that greater risks of a major spill are associated with routine

Maritime commerce. For your information, we are attaching a chart comparing the volumes of selected materials transiting five major U.S. port with that of the Apollo vessel.

We believe the liability insurance requirements for incinerator ships need be no more stringent than those of the Maritime fleet. For the record, we are including ASI's comments on liability insurance subparagraph of EPA's Proposed Ocean Incineration Regulations:

****

Section 234.10 Financial Responsibility Requirements

The level of liability insurance proposed is far in excess of those required for other segments of the commercial transportation industry and is inconsistent with requirements for land disposal of waste under any current law or regulation.

Liability insurance for vessels is handled on a worldwide basis by Protection and Indemnity "Clubs" where members (insurers) include companies for many nations.

Insurance brokers have expressed significant concern regarding uncertainties of the American regulatory and judicial processes, which constantly change and broaden the interpretation of policy provisions. This is evidenced by recent judgements against insurance companies in a number of environment cases.

Both the primary and reinsurance markets are in turmoil, each citing concern over a lack of consistency in regulatory interpretation among the various state/federal courts. Recent development have seen even non-hazardous land-based waste disposal activities hampered in obtaining insurance because of the constantly changing definition of "sudden" and accidental.

This concern coupled with the negative effects of the U.S. regulatory process and the uncertain and/or illegal activities on the part of intervenors, has a profound impact on the availability and price of insurance coverage.

While we recognize the Agency has requested comments on "appropriate limits of insurance", a most eloquent discussion of the Agency's regulatory problem was presented by Robert S. Lagatolla of the Water Quality Insurance Syndicate in testimony before the House Subcommittee on Natural Resources, Agriculature Research and Environment, June 13, 1985. A copy is attached.

The proposed regulations leave the issue of limits open and fail to define exactly what the required insurance should cover.

Through this proposed regulation, the Agency would place an ocean incinerator operator (permittee) under the control of a totally unrelated industry (ie. the insurance industry).

This creates a situation that is prejudicial to one form of American commerce.

There are well established policy limits and language for vessels engaged in ocean-going commerce. Under the Jones Act, hazardous wastes shipped in ocean vessels are considered "cargo". The hazards associated with the cargo carried on-board an incinerator vessel are no greater, and in many instances less, than hazards posed by hazardous commodity chemicals routinely shipped over U.S. waters every day.

As a general comment, this section requiring extensive liability insurance with certain endorsements is far in excess of the insurance with certain endorsements is far in excess of the insurance reuqirements for other forms of commerce, including other parts of the marine transportation industry. Accordingly, levels of liability insurance should be consistent with the level of risk, taking into account the advanced safety and navigational features of current incinerator ships and the requirements for other segments of the maritime industry. Large bulk carriers in excess of 50,000 DWT, might well be required to carry one level of insurance, for example, $500 million. Therefore, a small incinerator ships in the 4,000-6,000 DWT range should, therefore, carry proportionately less.

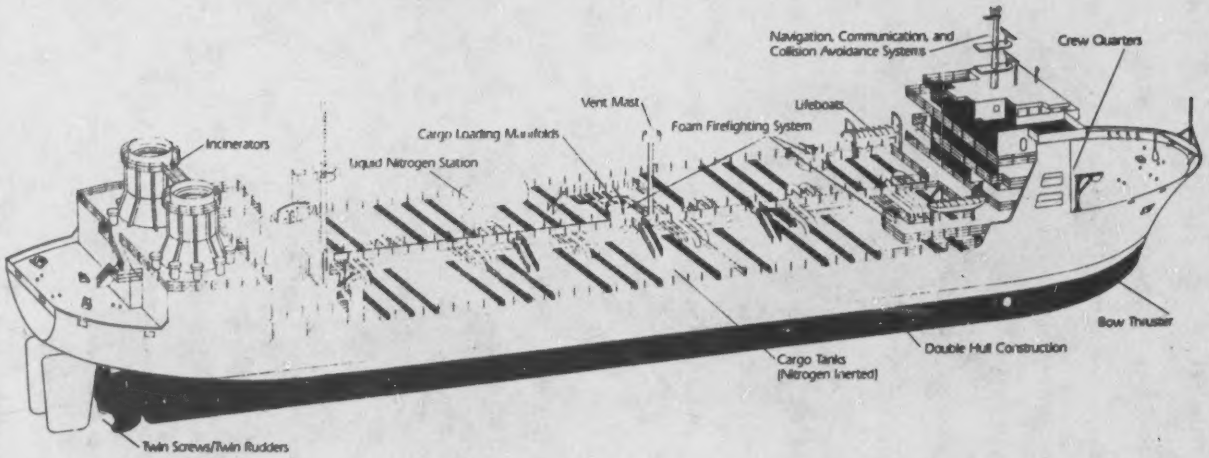
This subsection also sets other requirements which are not standard practices in the insurance industry. For example, the requirement in section 234.10(c)(2)(ii) for an insurance carrier to be responsible for payment from the first dollar (ie "within any deductible") with a right of reimbursement from the insured will make such coverage more difficult to obtain without respect to the premium.

Section 234.10(c)(2)(iii) requires an applicant to provide a signed duplicate original of the policy and all endorsements to the Assistant Administrator or permit program manager whenever requested.

This section should be deleted. Under section 234.10(d) an applicant must provide the Agency with an insurance certificate attesting to the fact that the permittee has obtained the required insurance.

The proposed regulation would also require an applicant to obtain the required insurance coverage, as evidenced by a certificate, at the time of application for a permit. Applicants are fully aware that a certain amount of liability insurance must be obtained prior to start up of operations. It is unreasonable to require an applicant to purchase the required insurance at the time of application. Rather, final permit approval should be conditional with the provisions that the applicant furnish the necessary proof of coverage prior to beginning operations onboard the vessel.

The Apollo


Navigation, Communication, and Collision Avoidance Systems
Crew Quarters
Vent Mast
Lifeboats
Foam Firefighting System
Cargo Loading Manifolds
Incinerators
Liquid Nitrogen Station
Bow Thruster
Double Hull Construction
Cargo Tanks (Nitrogen Inerted)
Twin Screws/Twin Rudders

The Apollo	
Overall length	369 feet
Beam	60 feet
Gross tonnage	4,850 tons
Liquid cargo capacity	1.33 million gallons
Number of cargo tanks	12
Sustained sea speed	10.7 knots
Range with full load	6,940 nautical miles

AT-SEA INCINERATION, INC.

Questions Submitted by Senator Lautenberg

QUESTIONS FOR MR. CANTER

Question 1. The New Jersey Hazardous Facilities Siting Commission's recently released plan does not include a role for ocean incineration.

A. What role do you see ocean incineration playing in the disposal of hazardous wastes?

B. Do you believe that the Commission has accurately estimated the future liquid hazardous waste which will need to be disposed of?

Ocean incineration is a demonstratedly effective disposal technology which will play a significant role in this nation's program to properly dispose of its hazardous waste. It offers particular advantages to the people and industry of New Jersey.

According to the Environmental Impact Statement prepared for the North Atlantic Incineration Site (p. 1-21), ten percent of the U.S. industrial chemical wastes are produced in East coast states: Delaware, New Jersey, Pennsylvania, and West Virginia. The 1979-80 estimate showed that 9.2% of the total U.S. organic chemical wastes, 11.8% of the potential total pesticide wastes, and 10.8% of the total U.S. potential petroleum refinery wastes were considered available from the East coast market. This projection was made at a time when EPA estimated the volume of hazardous wastes generated in the U.S. annual at 44-63 million metric tons, a figure which has now been revised to 264 million metric tons.

In testimony before the House Subcommittee on Natural Resources, Agricultural Research and Environment, Dr. William D. Barnard of the Congressional Office of Technology Assessment presented 1983 data on the statewide generation of ocean-incinerable hazardous wastes. Figure 2 shows that 5% of this material is produced in New Jersey, 5.6% in Pennsylvania, 1.3% in West Virginia, 2.3% in New York, and 0.3% in Delaware.

Further, Dr. Barnard's testimony confirmed the estimate of future demand for incineration capacity by EPA's Office of Policy, Planning and Evaluation (OPPE). A copy of his testimony is attached.

It is unfortunate that the Siting Commissions' Waste Facilities Plan relies so completely on historic data, generated from the U.S. hazardous waste manifest records (1981-83). In our view the Commission's consultant did not project the future requirements properly, and we expressed that opinion in testimony before the Commission on the draft plan. Similar concern was expressed by the Chemical Industry Council of New Jersey, the NJ Alliance for Action, the Greater Newark Chamber of Commerce, and other informed groups. A copy of my testimony of October 22, 1984 is attached.*

Although not expressly listed in The Plan, ocean incineration is not excluded. The technology is mentioned, however, and it is unfortunate that EPA's protracted inaction toward issuance of research permits may have caused an impression that incineration ships are not "commercially" available.

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* Retained in committee files.

More important may be the fact that the Commission's Advisory Council, which includes members of the hazardous waste industry, may have had significant input in the development of New Jersey's future plans and procedures. Obviously, a company holding a commercial operating permit has a vested interest in making it as difficult as possible for new applicants to secure required permits. As evidence of our concern, one need only review the verbal response to your questions June 19 by the Executive Director of the Siting Commission, which seems to "parrot" the testimony before the House (June 13, 1985) of the representative of the only licensed incinerator operating in the region.

c. Have any New Jersey Government officials indicated that the Commission's estimates were too low?

Please refer to the attached transcript of DEP Commissioner Robert Hughey's comments on the draft plan, a copy of which is attached.[*]

Question 2. Earlier Ken Kamlet suggested that there be an assessment of the suitability of various ports serving as transfer points for ocean incineration vessels.

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[*] Retained in committee files.

Do you feel there is a need for such an assessment?

Port specific requirements must be considered in light of many factors. Most specifically, incinerator ships are really a special class of bulk chemical tanker. Importantly, the Apollo vessels are Type II chemical tankers, designed expressly for transporting hazardous wastes and equipped with a variety of redundant navigational and collision avoidance systems not found on most vessels engaged in transporting materials--many of which are far more dangerous than the wastes which will be incinerated. Please refer to the vendor's literature presented in response to questions from Senator Bentsen.

The existing and proposed regulations require the preparation and review by the U.S. Coast Guard of a Contingency Plan, which details the actions that will be taken in the event of an accident. This Plan, which is specific to the port facility and the Apollo vessel, must be consistent with the Coast Guard's Response Plan prepared by the Captain of the Port. In essence, Coast Guard acceptance procedures of an applicant's Contingency Plan constitute an assessment of the potential for an accident.

In addition, although our incinerator ship is no different from a chemical tanker and the only activity associated with the coastal zone is to transit like a tanker, an applicant for an ocean incineration permit must certify that his operations will be consistent with the state's Coastal Management Plan, under provisions of the Coastal Zone Management Act.

The marine transfer facility supporting the operation of the incinerator vessels will require a RCRA permit administered either by EPA or the state. With regard to the marine transfer facility we are proposing for Port Newark, NJ DEP rules require an applicant for a hazardous waste facility to prepare an Environmental and Health Impact Statement (EHIS) on its operations.

Thus, we believe existing requirements already respond to Mr. Kamlet's suggestion.

Question 3. Your testimony cites the Science Advisory Board Report as indicating that ocean incineration is safe. Yet the report raises numerous questions about incineration. How would you respond to each of the following SAB findings:

*Research on incinerator performance has occurred only under optimal burn conditions. Short-term incinerator operations under upset conditions can greatly increase incinerator loadings of the environment.

The Science Advisory Board's report should be read in light of its own recommendation, namely that

> . . . The comments, both positive and negative, should be interpreted by the Agency (EPA) and the public as a desire to strengthen already existing incineration

> programs rather than to discontinue what is already in place (p. V) (Emphasis supplied)

A review of the report and transcripts of the Board's meetings shows that more information is known about the incineration of hazardous wastes at sea than about any other combustion process.

EPA's regulatory process controls the quality and quantity of emissions testing--whether that testing is conducted on a manufacturing process or a hazardous waste incinerator (land- or sea-based). The data available represent the results of tests conducted by EPA contractors, designed to demonstrate compliance with then-applicable standards.

As you know, EPA has been evaluating the potential of ocean incineration for many years. For the record, I am attaching a July 15, 1983 Review of Incineration at Sea by EPA's Office of Policy and Resource Management. This assessment drew four specific conclusions.

- Incineration at sea appears to have been adequately demonstrated as a viable technology.
- Incineration at sea appears to be environmentally sound relative to other hazardous waste disposal methods.

- Ocean incineration has the potential to handle a much larger share of the disposal market than it presently does.

- EPA's hazardous waste policies may be discouraging incineration at sea and other advanced disposal technologies.

The attached "Comparative Assessment of Land-Based and Ocean Incineration Ships", is a copy of viewgraphs used at an EPA presentation at a 1984 technical conference.*

It is quite apparent that ocean incineration has been extensively studied. The April reports of the Office of Policy, Planning and Evaluation and the SAB, have truly served to confirm already known data on the reliability, safety and national need to go forward.

Both the SAB and EPA, through development of its Research Strategy, recognize the need to improve monitoring capabilities. Through actual tests on board the available incinerator ships, gaps in our scientific data base can be filled. This serves only to strengthen ASI's position, namely that research burns at sea should be initiated promptly.

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* Retained in committee files.

As part of ASI permit application, we presented a recommended program which would allow evaluation of incinerator performance under a variety of conditions. Portions of this program appear to have been considered in the Research Strategy. In fact, dockside testing to test incinerator dynamics on non-hazardous materials was originally proposed by ASI, in an attempt to establish safe methods with which to test the incinerator.

- EPA's program to assess the exposures of organisms to chemicals from incinerators has been inadequate.
- The toxicities of emissions from incinerators are largely unknown.
- While there is no documentation that incinerators result in adverse ecological effects or significant acute human health hazards, monitoring programs used so far were "few and narrow in scope."
- EPA's use of destruction efficiency as a measure of the effectiveness of incineration does not completely analyze incineration emissions and therefore is not an adequate basis for developing exposure assessments.

All of the above issues were raised by the SAB regarding EPA's program to license and monitor incinerators, whether on land or at sea. It is important to note that critics, whether they are members of the public or competitors, interpret the Board's recommendations as a damnation of ocean incineration. These critics would delay utilization of this demonstrated technology until all the questions regarding potential risk are answered. It is interesting to note the critics of the technology are not demanding a similar level of effort for land-based incinerators. It is also interesting that, even though the SAB has recommended additional studies of incineration (land- or sea-based), critics oppose testing of ocean incinerator ships while supporting continued operation of their land-based counterparts, about which less information is available..

There is a potential risk--EPA's Office of Policy, Planning, and Evaluation has already published a report which concludes the risk to human health from ocean incineration is less than that of land-based incineration.

The problem this nation must solve is how to properly dispose of the 264 million tons of hazardous wastes generated annually, not to mention the untold millions of tons in the abandoned dumpsites that pockmark our nation. We know what the actual risk of inappropriate disposal options--poisoned ground water supplies, and major health problems to unsuspecting citizens.

UNISON
A Joint Venture
of McGraw-Edison
and
Union Carbide

July 9, 1985

Senator Lloyd Bentsen
United States Senate
Committee on Environment and Public Works
Washington, D. C. 20510

Dear Senator Bentsen:

I am pleased to provide additional information to the Subcommittee on Environmental Pollution to supplement my testimony at the June 19 hearing. As requested, the following information responds to the questions posed in your letter of June 24.

1. In your statement you discussed the potential of the UNISON process for PCB disposal. Do you foresee any other applications?

    — Do you have a rough estimate of the comparative costs of this method of PCB disposal compared to land or ocean incineration?

    — What are the advantages of this technique over the plasma arc method of destruction, as well as land-based and ocean incineration?

At present the Union Carbide technology is focused on PCB transformers. EPA estimates more than 100,000 such transformers are still in use. The technology, however, also has future applications to the more than 20 million mineral oil PCB-contaminated transformers, as well as to rectifiers used in electrostatic precipitators and reactors used in power transmission, two additional sources of PCBs.

The Union Carbide technology decontaminates PCB-filled electrical transformers thus converting them to non-PCB equipment per EPA regulations. This technology, RECLASS 50^{SM}, neutralizes a substantial environmental hazard while preserving a valuable asset and eliminating a major route by which liquid PCBs are entering landfills.

The average PCB transformer contains over 2,000 pounds of PCBs and several hundred pounds of PCB-soaked paper, cardboard, wood, and other highly absorbent materials. The technology developed by Union Carbide is a method for decontaminating adsorbent solids, soaked with hazardous and toxic liquids such as PCBs. The RECLASS 50^{SM} Process offered by UNISON eliminates the need to replace valuable electrical equipment by extracting PCBs from transformers (even that held within porous materials) so completely that the transformer

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becomes a non-PCB item. The PCBs which are removed are concentrated in liquid form so that they are available for more permanent and secure disposal methods such as destruction or chemical alteration. The technology is thus strictly speaking not an alternative disposal process. Rather, the process extracts and concentrates PCBs and other wastes so they can be more economically and efficiently destroyed by approved EPA techniques.

Prior to the development of this new technology, the only way to eliminate PCBs from PCB transformer use was to replace the entire transformer with new non-PCB equipment. After the removed PCB transformer was drained and its surfaces flushed, the carcass was typically landfilled in accordance with EPA regulations. Flushing, however, decontaminates only surfaces; the majority of PCBs (20 - 100 pounds per transformer) remains within the porous materials. Thus, while PCB transformers can be phased-out and replaced, substantial quantities of hazardous liquid waste are put into landfills.

The cost for replacing a 2000 KVA PCB transformer typically averages 55 to 60 thousand dollars. This includes the new replacement transformer, installation, preparation of old unit for disposal, and landfill charges. By comparison, the new technology typically costs about 35 to 40 thousand dollars complete for the same unit.

2. Have you approached EPA about permitting this process?

Union Carbide has been in close contact with EPA for more than two years to detail and seek comments on its overall methodology. Some portions of the servicing are authorized generically by existing EPA regulations; other portions require specific EPA approval. Union Carbide will continue sharing details of its plans and progress with EPA and obtain all necessary permits as the technology evolves and is put in place.

3. When will the technology be available on a commercial basis, and what will its projected capacity be?

This technology has been commercialized to a full service capability designated RECLASS 50^{SM} Transformer Service, and has been offered throughout the United States by UNISON since September 1984. The service includes a transformer assessment followed by management of the entire provess, including provision of all raw materials, labor, distribution, analysis and destruction of the PCBs. All activities are performed in accordance with EPA regulations. As Union Carbide announced to the EPA and the public in March 1985, the first four serviced PCB transformers have been reclassified to non-PCB status.

UNISON's plans call for a full scale capacity that will allow 5,000 transformers to be serviced each year. As each PCB transformer contains approximately 300 gallons of PCBs, this full scale capacity will result in removal for destruction of 1.5 million gallons of PCBs per year.

I trust this additional information will be useful to the Subcommittee.

Sincerely,

William H. Martin

William H. Martin
Director of Technology

WHM:ajf

RESPONSES TO QUESTIONS
ASKED BY SENATOR LLOYD BENTSEN
FOR RESPONSE BY WASTE MANAGEMENT, INC.
CONCERNING OCEAN INCINERATION

QUESTION 1

What is the opinion of Chemical Waste Management attorneys on the maximum amount of liability the company would be exposed to in the case of a spill within State territorial water boundaries or within the 200 mile zone?

> —If the risks of an accident are as small as you and EPA state, would your company support waiver of existing liability limits to assure full recovery?

QUESTION 2

What do you recommend as appropriate liability insurance requirements for cleanup and repair? What kind of protection do you think should be provided for third parties whose livelihood is damaged if an accident occurs, even though they are not physically damaged?

Answer

Chemical Waste Management, Inc., ("CWM") could be exposed to liability without limitation in the event of any spill. Although applicable federal statutes contain provisions that may limit liability, each statute contains exceptions based upon negligence or misconduct, and liability for response costs may be unlimited under such statutes without regard to fault.

Provisions of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601 et seq. ("CERCLA"), are illustrative. CERCLA establishes a strict liability standard for spills of hazardous substances. Liability may be limited to $5 million for combined cleanup and natural resource damage costs in the case of a "vessel." Liability for releases from "facilities," however, is unlimited for the costs incurred by the government in responding to a spill and is subject to a $50 million liability ceiling for any damages to natural resources. No limits on liability are available under CERCLA if a release is the result of willful misconduct or willful negligence within the privity or knowledge of the owner or operator. 42 U.S.C. 9607.

Exhibits A* and B* are opinions prepared by the Environmental Protection Agency ("EPA") and the Department of Justice concerning potential liability for spills from incineration vessels. The opinions address provisions of CERCLA and of several other pertinent federal statutes, including a section of the Resource Conservation and Recovery Act, ("RCRA"), 42 U.S.C. 9673, which may independently provide authority for cleanup costs without limitation of liability.

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* Retained in committee files.

We refer the Committee to these detailed opinions of EPA and the Justice Department and we draw special attention to a few points made in them. First, the EPA opinion concludes that "it may be appropriate to consider ocean incineration ships to be 'facilities' for purposes of CERCLA." Exhibit A at 3. The Justice Department opinion does not evaluate this matter, but accepts the conclusion of EPA for the purpose of a separate analysis. Exhibit B at 3. If this opinion is good law, liability for spills from incineration ships would be unlimited in the case of cleanup costs and would be either unlimited or limited at $50 million in the case of damage to natural resources.

Second, the EPA opinion concludes that "LOSLA's limitations have been removed for state liability relating to the release of hazardous substances within the state" and notes that "CERCLA Section 114(a) ... preserves the rights of a state to impose additional liability [above the limits of CERCLA] with respect to releases of hazardous substances..." Exhibit A at 15. The Justice Department opinion supplements EPA by noting that such state laws could extend "outside state waters where an impact on state waters may result." Exhibit B at 5.

In other words, the State of Texas, or any other state, is free to adopt a law which imposes unlimited liability for any release of hazardous substances which may affect state waters. One may ask why the Governor and Attorney General of Texas are bringing questions of liability to the United States Congress when they are free to address these questions back home.

Waste Management, Inc. ("WMI") does not believe any liability insurance coverage should be mandated for cleanup and repair. As discussed at length in WMI's comment on EPA's proposed regulations, at 22-25;49-63, we believe the option of bonding or other means of demonstrating financial responsiblity should be authorized. The precise amount of financial responsibility that should be required is difficult to judge because potential costs and damages and potential liability are uncertain. The $50 million lower limit of the range proposed by EPA is substantially greater than any amount that we believe has ever been paid for cleanup of a chemical spill.

Liability for any damage caused to third parties should be considered in the broader context of liability for damages from releases of petroleum or hazardous substances from any vessel. Mechanisms to measure and attach this liability have been considered for years in the Congress and in the courts. Promulgation of regulations to measure natural resource damages, including loss of use value, is mandated by Section 301(c) of CERCLA, although these regulations have not yet been issued. For judicial review of third party claims for damages resulting from releases of hazardous chemicals from vessels, we refer the Committee especially to Louisiana ex rel. Gust v. Test Bank, 752 F.2d 1019 (5th Cir. 1985) now pending before the Supreme Court upon a petition for writ of certiorari (No. 84-1801, May 13, 1985). The majority opinion in Test Bank discusses at some length the comparative merits of loss insurance versus liability insurance for such spills, favoring the former.

WMI is not reluctant to accept responsibility for any releases that might conceivably be attributable to its vessels. We would not object, for example, to a law of the State of Texas that would establish unlimited liability from releases from all vessels carrying petroleum or hazardous substances -- including hazardous waste. We would not support, however, any discriminatory proposal that would waive limits of liability for owners of incineration vessels while preserving such limits for the far larger trade in petroleum and raw hazardous chemicals.

WMI would like to note for the record that the State of Texas responded favorably to the original designation of the Gulf of Mexico Incineration Site. Exhibits C, D, and E. We are not aware of any facts pertinent to the merits of ocean incineration technology or of the Gulf site upon which the State has based its reversal of position and its recent statements on liability for potential spills.

QUESTION 3

Waste Management, Inc., has an established land-based disposal business. Do you have plans to site and construct land-based incinerators? Do these hinge on EPA's permitting ocean incineration?

Answer

CWM presently operates two land-based incinerators — one in Chicago and one in Sauget, IL, near St. Louis.

In 1984, we initiated an effort to site and construct an arc furnace for the thermal destruction of PCB solids and other waste materials. After delays because of community opposition, the arc furnace is now under construction in New York. In the same year, CWM also began planning to construct a PCB liquid injection incinerator in Arlington, Oregon. This effort has been suspended because of difficulty in siting.

We also plan to construct incinerators at several other locations: Kettleman, California; Emelle, Alabama; Lake Charles, Louisiana; and Model City, New York.

CWM's plans to construct land-based incinerators are independent of the permitting of ocean incineration. These land-based incinerators will be designed to handle solids, sludges, and liquids, whereas the Vulcanus ships incinerate only liquids. We expect that demand for incineration of solids and sludges will soon substantially exceed current capacity. EPA already has projected that demand for incineration of liquids will exceed capacity by 7 or 8 fold.

QUESTION 4

Concerns have been raised that pollution control technology requirements applied to land-based incinerators should be applied to ocean incinerators as well. Futhermore, vessel mounted incinerators are subject to more variables that may affect their performance than land-based incinerators.

—Please address the variations in technology, and why in your view additional control requirements aren't needed for ship incinerators.

Answer

The essential difference in pollution control between ocean-based and land based incinerators is the absence of scrubbers at sea. Scrubbers are typically needed on land-based incinerators to meet emission limits for hydrogen chloride (RCRA regulations limit HCl emissions on land to 4 pounds per hour) and for particulates, largely generated by solids and sludges. Scrubbers are not designed or expected to remove toxic organic chemicals from emissions, such as any incompletely destroyed waste or any "PICs." See EPA's Incineration Study, Background Report I at 30. Furthermore, scrubbers on land-based incinerators do not remove heavy metals efficiently. Metals emissions from land-based incinerators, for example, are the principal basis for EPA's opinion that ocean-based incinerators pose 30 to 40 times less risk of cancer than incinerators on land. EPA Incineration Study at 84.

We note that scrubber waters themselves present a disposal problem. For example, the April 1985 report of the EPA Science Advisory Board discusses scrubber effluents and states in respect to land-based incinerators:

> Scrubber waters from land based incinerators also contain hazardous materials which must be disposed of in an environmentally acceptable manner. In at least one case, the Committee observed that scrubber water was discharged to the local sewer

> system; ultimately, some of the materials might enter local waterways. SAB Report at 21.

Hydrogen chloride emissions at sea are harmless. The compound is rapidly precipitated from the atmosphere. For example, concentrations of HCl during test burns in the Gulf of Mexico were 0.1 ppm at a distance of 5 miles downwind of the Vulcanus and were below detection levels at a distance of 8 miles. See data cited at 40 Fed. Reg. 8224, February 28, 1985.

In the sea, hydrogen chloride is rapidly neutralized. Previous testing has revealed no measurable change in pH caused by the incineration plume. Despite EPA's proposal to place a 10 percent cap on allowable change in alkalinity -- based on the existing limit for direct dumping of acids -- it is apparent that no regulation is necessary to ensure that alkalinity will not be changed to such a degree. For a more technical discussion of this matter, we refer to pages 129 through 134 of WMI's comment on the EPA Proposed Regulations and to pages 7 and 8 of reference 6 listed on page 147 of that comment.

Relief from the need for scrubbers on ocean incinerators allows destruction of highly chlorinated wastes that cannot or may not be incinerated on land. CWM's SCA incinerator in Chicago, for example, is not authorized to incinerate waste containing more than 35 percent chlorine by weight. In practice, the difficulties in meeting hydrogen chloride and chlorine stack emission standards on land limit the chlorine in waste to a lower amount. Ocean-based incinerators can destroy waste with much higher chlorine content, such as vinyl chloride, which is about 70 percent chlorine by weight.

The performance of ocean-based incinerators is not subject to more variables than incinerators on land. In fact, relief from the need for scrubbers limits the variables. The movement of the ship does not cause variability in waste feed, and no such variability has been measured. Special pumps initially feed waste at a greater rate than is to be injected into the incinerators and return a portion of the waste back to the tank. This procedure stabilizes waste flow and allows a metering pump located at each burner to supply a precise flow of the waste to the incinerator. Thus the feed system is insensitive to head pressure change caused by tank evacuation or any movements of liquid in the tanks.

Incinerator performance on the ship is analogous to the engine performance of a fuel injected automobile. A bump in the road has no effect because the perturbation of the automobile's engine is vanishingly small compared to the velocity of burning gases within the engine. In ocean incineration, the destruction process experienced by a droplet of waste is complete in much less that one second, so perturbations caused by the rocking of the ship do not interfere.

QUESTION 5

Please provide for the record a history of notifications of violations, penalties assessed, and litigation the company has been involved in resulting from hazardous waste management activities.

Answer

WMI's answer to this question is given in three parts. First described is the environmental compliance program of CWM. This program is intended to ensure that facilities owned by the company will meet governmental requirements and internal WMI policies for environmental protection. Next, we document the specific history requested of enforcement actions, including all actions taken since January 1, 1974. We also include a candid, outside analysis of allegations made against WMI in 1983. Last, we address several of the untrue and reckless allegations concerning WMI that were made at the June 19th Senate hearing by the Gulf Coast Coalition for Public Health.

The Environmental Compliance Program of CWM

CWM established its Environmental Compliance Program in April 1983 following a series of allegations in the news media, discussed below. The decision to establish the program was mindful of the need to assure a concerned public that WMI management was doing the best job possible to ensure compliance.

The Environmental Compliance Program operates through a system of environmental officers and an independent audit. An environmental officer is responsible for each CWM hazardous waste facility. These officers report directly to CWM's Environmental Management Divsion rather than to the local site managers. The Environmental Management Division is headed by Walt Barber, former Acting Administrator of the U.S. Environmental Protection Agency. This independent reporting mechanism was established to assure uncompromised information from these officers.

Environmental officers are principally chemists, chemical engineers, and civil engineers, knowledgeable and experienced in regulatory agency work at the state or federal levels. Typically, each has 3-5 years regulatory experience prior to joining the CWM environmental compliance program. Over half hold master's or higher degrees.

Environmental officers are responsible for ensuring that facility managers strictly comply with all federal, state, and local environmental regulations and established company policies and procedures on a day-to-day basis. Successful completion of this task requires day-to-day cooperation with governmental officials who enforce the laws. Besides direct interaction with the site managers, these officers provide thorough and objective reporting on the environmental compliance status of each site. These reports are reviewed by Mr. Barber and by the President of CWM, Joseph F. Knott. Established procedures require review of these environmental compliance reports before any other matters are considered upon regular visits to each facility undertaken by Mr. Knott and Mr. Barber. Local facility managers have ample incentive to get high marks on environmental compliance: a substantial portion of their annual compensation is based on their performance in this area.

The environmental officer program is complemented by a separate environmental audit program carried out by corporate staff of WMI. Annual audits are conducted of each CWM hazardous waste treatment, storage, and disposal facility, and biennial audits are made of transfer facilities.

Environmental auditors spend about one week at each CWM site. The environmental auditors evaluate facilities for compliance with all applicable environmental regulations and statutes, and with CWM policies and procedures for protection of the environment. The auditors also check the accuracy of the compliance reports prepared by environmental officers, serving as a double check on the performance of the facility manager and of the status of the facility itself.

The Vulcanus II, and any other ocean incineration vessels that WMI may operate in the United States, will be included within the environmental compliance program. Environmental officers will work from each port of operation and will be expected to cooperate closely with the EPA shiprider, who will be present on all voyages. CWM officers will reflect any concerns of the shiprider in environmental compliance reports.

Record of Governmental Enforcement Actions Concerning Chemical Waste Management

overview

A number of charges were made against CWM's operations in the news media in 1983. Previously, the company had generally enjoyed favorable press reporting. The Board of Directors of WMI engaged the law firm of Karaganis, Gail and White, Ltd., to investigate the charges made, report on the accuracy of the charges, and recommend changes in policies and procedures of the company to prevent recurrence of any charges that were substantiated.

The Karaganis report was given to WMI's Board of Directors in September, 1983. The report is included as Exhibit F to this response. The Karaganis report is, as stated by its preparers, neither a "whitewash" or a "stab in the back." The report did find that WMI could improve its current efforts at environmental compliance and that some failures in compliance had occured. On the other hand, the facts illucidated through investigation of charges reported in the media reveal that the charges were generally untrue or wildly exaggerated. Many of these same charges, however, have been repeated again and again in the news media and in statements of individuals and organizations seeking to discredit CWM, such as the testimony of the Gulf Coast Coalition for Public Health at the Senate hearing on June 19.

We commend the Karaganis report to the Committee, not only for its specific factual content but because of the dilemma which the overall message of the report poses for environmental policies of the United States.

The United States Congress has established policies requiring stringent management of hazardous waste and has directed the EPA to enforce these policies. The government has left the actual job of managing these wastes in the market place, however, and the environmental policies of the United States concerning hazardous waste will not succeed unless companies such as CWM can justify locating in that market to do the job needed.

Companies that manage hazardous waste are -- and should be -- closely regulated by government. National environmental policy is eroded, however, to the extent that regulation and enforcement is over-zealous or is transmuted by the press or by special interest groups into something that it was not.

The overall message of the Karaganis report points more toward such transmutation of facts in the media than to abuse of discretion by enforcement agencies. Such abuses are occurring, however, more of them recently than before. For example, in the case of the Kettleman City, California, facility discussed below, EPA initially assessed a civil penalty of $108,250 for alleged violations of law. Without substantiating rationale, the assessment was subsequently increased to $6,857,500. Alleged failure to have a fence around a PCB cell at the site over a one-month period is the basis for $1,532,000 of the penalty assessed. The entire site is surrounded by a fence to exclude unauthorized entrance, however, and the EPA has waived any cell-specific fence requirement. The penalty assessed is based on placement of PCB's in the cell during the month immediately preceding formal waiver of the requirement by EPA. On July 1, 1985, CWM obtained a federal temporary restraining order against collection of any penalties pending a full hearing.

CWM has borne a full load of untrue or recklessly excessive changes in the news media. It also has received unique scrutiny by federal enforcement officials and has been assessed unjustified penalties, such as the one discussed above, unprecedented in size.

The Congress and EPA must implement an agressive enforcement policy. WMI has no argument with that premise, or that CWM should receive close and continuing enforcement scrutiny. On the question of equity, we ask simply that the EPA develop an enforcement policy that focusses attention on all segments of the hazardous waste management industry -- on-site, where 96 percent of disposal occurs, as well as off-site. EPA's enforcement of the November 8, 1985, requirements contained in new section 3005(e)(2) of RCRA, for example, will be an important test of EPA's commitment to equity and to effective environmental protection policy. We believe that thoughtful consideration of the environmental objectives of enforcement will lead EPA to such a policy.

Our government must recognize that news accounts on hazardous waste have been, and will probably continue to be, exaggerated. In the enactment and oversight of laws by Congress, and in the enforcement of such laws by EPA, the government should be sensitive to the damage that can be done by the high pitch of an issue that creates such fear. We should recognize that the policies of our nation on hazardous waste will fail if passionate intensity of emotion leaves no room for reason in the treatment of companies that would manage the waste generated.

specific instances by site

Set forth below is a history of the administrative and judicial complaints filed since January 1, 1974, against storage, treatment or disposal facilities owned or operated by CWM, its subsidiaries or affiliates, alleging violations of state or federal environmental statutes or regulations during CWM's ownership or operation.

CWM - Emelle, Alabama: The Alabama Department of Environmental Management filed an administrative order (83-009-HW) which alleged that the leachate collection system in a trench was not installed within the time specified in the operational plan. The matter was later closed since the system was completed just 12 days after the order was issued. A settlement was reached and a release executed, with CWM paying a civil penalty of $50,000 for the 12-day delay.

The U.S. EPA and State of Alabama filed an administrative complaint before the U.S. EPA Administrative Law Judge (TSCA 84 H-03) which alleged that CWM stored liquid PCBs for more than one year after January 11, 1983, and alleged miscellaneous technical violations of RCRA. A consent decree was approved by the Administrative Law Judge between CWM, the U.S. EPA and the State of Alabama.

The Alabama Department of Environmental Management (ADEM) filed an administrative order (84-G-1208-W) with the Alabama Environmental Management Commission and the U.S. District Court alleging storage of PCB liquids for more than one year after January 1, 1983. The U.S. Court of Appeals ruled that ADEM was barred from prosecuting its order by virtue of State of Alabama's participation in the consent decree with U.S. EPA.

The liquid PCBs in question in these cases were being stored at the Emelle site for use in a research burn aboard the Vulcanus. After conducting two research burns, EPA cancelled a contract with CWM which provided for a third test burn. CWM was left holding large amounts of liquid PCBs in storage. EPA subsequently enforced a regulation prohibiting storage of PCBs for more than one year.

Finally, the U.S. EPA - Region IV filed an administrative complaint (TSCA-N83-8) which alleged a crack in the floor of one PCB storage area, that PCB drums were not dated, that drums and transformers were stored on top of closed disposal cells and that small amounts of PCB waste spilled on the ground. A consent decree was signed, a civil penalty of $13,500 was paid by CWM, and all matters were corrected.

We note that the Emelle site is perhaps the most environmentally safe disposal facility for hazardous waste in the United States. The site is underlain by a 500 foot thick layer of impermeable lelma chalk.

C.I.D. - Calumet City, Illinois: An administrative complaint was filed by the State of Illinois before the Illinois Pollution Control Board Court (PCB 76 184) which alleged release of odorous emissions into the air, failure to collect litter at day's end, and that the landfill height constituted a "scenic blight." The settlement accepted by the Pollution Control Board included an odor control program, a site beautification program, additional wind screens and a civil penalty of $1,000.

The State of Illinois filed a Civil Judicial Action before the Cook County (IL) Circuit Court (83 CH 2266) alleging that in 1980 the facility received some loads of hazardous waste (as defined by the State) for which no supplemental permits existed and that the facility failed to submit to the state the manifests for those loads. The matter is pending at the motions and discovery stage.

Chem-Security Systems, Inc. - Arlington, Oregon: Chem-Security Systems, Inc. met with the U.S. EPA and voluntarily disclosed that approximately 500 gallons of PCB liquids had been inadvertently solidified and buried, and that the materials already had been excavated and removed to a PCB incinerator. U.S. EPA filed an administrative complaint and Chem-Security Systems, Inc. entered into a consent agreement with U.S. EPA. Chem-Security Systems agreed to pay a civil penalty of $3,500. The matter was closed.

Lyncott Corporation - New Milford, PA: Shortly after CWM's acquisition of the site, the Pennsylvania Department of Environmental Resources (PADER) filed an administrative order with the Pennsylvania Environmental Hearing Board (81-154-H). PADER alleged that two hazardous waste burial valuts were not built in accordance with terms of the permit. CWM had only depositied a fraction of one percent of the wastes contained during its 1-2 month period of ownership and operation. CWM filed a suit to rescind the purchase based on a breach of warranty. An interim agreement was reached with PADER for off-site removal of vault contents; a penalty of $20,000 was assessed in a subsequent consent agreements. Shortly thereafter in the recession proceeding, the court entered a consent order rescinding CWM's purchase of the site. CWM advised PADER that it would honor the cleanup agreement, however, and began negotiations with the original generators to share the costs of the cleanup. CWM is anxious to reach agreement with the generators and favorably resolve the matter. The clean-up is underway at the site.

The U.S. EPA Region III filed an administrative complaint (RCRA-III-108) which alleged the Lyncott site had not submitted a quarterly groundwater monitoring statistical analysis. The complaint was subsequently withdrawn by EPA and the matter closed.

Ohio Liquid Disposal - Vickery, Ohio: U.S. EPA, Region V, filed an administrative complaint (V-N-81-R-21) alleging an explosion in a reaction tank; erosion at one pond; that no contingency plan had been submitted to local officials; that hazardous waste from Canada had been received at the site without four weeks' notice to EPA; and that manifests were not maintained at the proper location. U.S. EPA and CWM entered into a consent agreement. All corrective measures were implemented and a civil penalty of $2,000 was assessed. The case was closed.

The State of Ohio filed a civil action in the Sandusky County Court of Common Pleas (84-CV-384) which alleged: operation of deepwells in violation of state permits; PCB contamination of the site and a transfer of PCB contaminated waste oils; and failure to follow the waste analysis plan. In a consent decree approved by the Court, CWM agreed to take many steps for improvement of the site. Civil penalties totaling $10 million were assessed, with payment to be made to Ohio and Sandusky County over a 10 year period.

William Warner, et al. filed a civil action in the Sandusky County Correction Pleas Court (83-CV-781) alleging odorous emissions, groundwater contamination, and distribution of PCB oils, and seeking equitable relief and damages. The matter is pending.

The Ohio EPA issued an administrative order alleging that on three dates fumes were released from a site pond, caused by a reaction of incompatible materials. Subsequently, an order was issued to cease recept of wastes in ponds. An independent guard service was brought in and a fine of $40,000 was assessed. This action was superseded by a federal consent agreement requiring cessation of receipts until November, 1985, or until the pond inventory is reduced to 50 million gallons, whichever is later.

The U.S. EPA, Region V, alleged (TSCA-V-C-307) improper acceptance of PCBs on site and improper storage and distribution of the same in commerce. In a separate allegation, the U.S. EPA alleged non-compliance with groundwater requirements and slow recycling. CWM was fined $2.38 million. A consent order was approved requiring rapid closure of the ponds for the first set of findings, payment of a penalty of $120,000, and enhanced groundwater monitoring in respect to the second finding of the order.

CWM notes that in the consent agreement (TSCA-V-C-307 and RCRA-V-C-000) the U.S. EPA states, "The alleged violations of TSCA and RCRA at the facility have resulted in no known threat to public health from the facility. Since becoming aware of such allegations in March of 1983, respondent has cooperated fully and responsibly with complainant in taking all appropriate corrective actions." At 2.

Ohio Waste Systems - Evergreen Landfill, Ohio: The U.S. EPA, Region V, filed an administrative complaint alleging failure of CWM to comply with groundwater monitoring requirements and recordkeeping. The matter was adjudicated and resulted in a $3,000 penalty. The matter was not appealed by either party.

National Industrial Environmental Services, Inc., Furley, Kansas: Eighteen months after the acquisition of this site, CWM discovered contamination of groundwater. As a result of the discovery, CWM brought suit against the former owners of the site, alleging breach of warranty, based on assurances made that the facility was in compliance with all applicable laws governing it.

On March 1, 1985 the U.S. District Court for the District of Kansas, Judge Patrick Kelly, ruled in favor of CWM and awarded the company a $10 million judgement. Judge Kelly stated that CWM had acted in a fully responsible manner and did not deserve the damages incurred to its reputation. The legal actions contributing to this damage are enumerated below.

An administrative order (83-E-10) was filed by the Kansas Department of Health & Environment (KDHE) which alleged late payment of an annual escrow fee of $5,000. A civil penalty of $700 was assessed and paid. The matter was closed.

KDHE filled an administrative order again alleging late payment of the annual escrow. A civil penalty of $350 was assessed and paid.

The U.S. EPA Region VII filed an administrative complaint (VII-80-T-90) which alleged storage of one transformer in a non-complying storage area, storage of one transformer and two capacitors were without PCB marking, and absence of certain required records for 1978 and 1979 prior to acquisition by CWM. All matters were corrected within one month of CWM acquisition. A civil penalty of $8,500 was paid by the prior owners and ~~the matter closed~~.

KDHE issued an administrative order (82-E-1) alleging that operation of the site was causing groundwater pollution and ordering cessation of treatment and disposal operations. The N.I.E.S. site ceased receipt of wastes for treatment or disposal. CWM began an extensive environmental monitoring and remediation program at the site. The KDHE closure order is under appeal, and CWM is attempting to negotiate a consent decree.

Wayne and Edna Miller, et al. filed a civil action in the U.S. District Court in Kansas (82-1043) alleging unspecified violations of the Clean Water Act and TSCA, and unlawful groundwater contamination and odor emissions. The plaintiffs are requesting equitable relief and damages. This suit was filed just two days after KDHE filed their administrative order. The case is still in the motions and discovery stage. CWM has settled the claims of the Miller's and Erdwien's by purchasing their property, which were the only properties upon which level of contamination is alleged. The matter is pending, but the principals in the case have settled.

The KDHE ordered additional testing for dioxin in monitoring wells and ordered CWM to submit remedial alternatives for two evaporation ponds. The orders were consolidated and eventually resolved in a federal consent agreement with which KDHE is satisfied.

The KDHE issued an administrative order (84-E-40) requesting construction of a slurry wall around old disposal cells. The Director of KDHE recommended that the state defer to the U.S. EPA on enforcement of this and related issues. The hearing closed May 31, 1985.

Finally, the U.S. EPA Region VII alleged (CERCLA 85-F0040; RCRA 85-H-0024) occurrence of a release from the facility's contaminated groundwater that might threaten human health or the environment. A consent order was negotiated requiring long-range remediation of the plume by dewatering. There was no penalty.

E.S.L., Elwood, Illinois: The Illinois Environmental Protection Agency (IEPA) filed an administrative complaint (PCB-79-256) before the Illinois Pollution Control Board which alleged production of an odorous nuisance from ponds and the blowing of litter scheduled to be landfilled. A $7,000 civil penalty was assessed and a compliance program was included in new permits for the landfarming operation.

Denver-Arapahoe Chemical Waste Processing Facility (DACWPF), Arapahoe County, Colorado: The U.S. EPA, Region VIII, filed an administrative complaint (RCRA [3008] VIII-84-08) which alleged failure to decontaminate equipment used in closure of storage pads. A civil penalty of $1,500 was assessed and paid.

The Kansas Department of Health & Environment filed an administrative order (82-E-33) which alleged the company's failure to return two completed manifests to a Kansas generator within 30 days after receipt of waste at DACWPF. KDHE set aside the order.

The U.S. EPA, Region VIII, filed an administrative complaint (RCRA [3008] VIII-81-6) which alleged disposal of a corrosive waste without following the waste analysis plan. The U.S. EPA assessed a penalty of $20,000. However, the waste was manifested to DACWPF as a non-hazardous waste. CWM appealed the penalty and an agreed order was entered calling for amendments to the analysis plan. No penalty was assessed.

The U.S. EPA, Region VIII, filed an administrative complaint (RCRA [3008] VIII-82) which alleged the presence of standing water in a drum burial trench. The EPA ordered the cessation of drum burial until an improved surface water management plan was submitted. A consent agreement was entered into which incorporated a revised water management plan. The case was closed.

The U.S. EPA, Region VIII, filed an administrative complaint (RCRA [3008] VIII-83-5) alleging migration of liquid through the upper liner of a double-lined pond; failure to record the migration in the log; failure to remedy deficiencies; deficiencies in placement of groundwater monitoring wells. The order also established remedial requirements and assessed a penalty of $48,000. The order was appealed, as was the penalty. While the matter is pending, CWM is pursuing all elements of remedial action. The matter is on appeal before the U.S. District Court for the District of Columbia.

The U.S. EPA filed an administrative complaint (RCRA [3008] VIII-83-16) which alleged discharge of burial cell leachate into a pond, presence of standing water in the burial cell trench, and storage of deteriorated drums. The U.S. EPA also ordered remedial action at the site, and assessed a penalty of $193,650. The company implemented all elements of the remedial action and a penalty settlement of $70,000 was paid.

Finally at DACWPF, the U.S. EPA issued an administrative complaint which alleged the facility closure plan was not modified and resubmitted to the U.S. EPA within the time specified. A civil penalty of $775 was assessed. A consent agreement was signed, establishing a schedule for submission of a revised closure plan. No penalty was paid and the matter was closed.

CWM, Kettleman City, California: The U.S. EPA, Region IX, filed an administrative complaint (RCRA 09-84-0037) alleging an inadequate groundwater monitoring system; major modifications to the facility undertaken without agency approval, and lack of an unsaturated zone monitoring program. U.S. EPA assessed a civil penalty of $108,250. The original RCRA order was amended to include additional record-keeping and operational and inspection-related alleged violations. The penalty assessment was increased to $5,325,500. A separate TSCA action (TSCA 09-85-0009) was also filed by EPA seeking a $1,532,000 penalty. Most of the TSCA allegations concern an alleged failure to have a fence around a PCB disposal cell at the site for the month preceding EPA's waiver of such fence requirements. On July 1, 1985, the U.S. District Court in

San Francisco, California, entered a temporary restraining order, enjoining the U.S. EPA from collecting any penalties or taking any action until a hearing was held on the CWM challenge to the EPA complaint on due process grounds.

CWM, Port Arthur, Texas: In a judicial complaint filed in the Jefferson County District Court, the State of Texas alleged a failure to maintain a leachate collection system and dikes. A settlement has been agreed to under which CWM will investigate waste trenches with damaged leachate systems and will develop a plan to fix them. Additionally, CWM will pay a $1 million civil penalty and install at least 40 additional groundwater monitoring wells.

CWM, Springfield, Ohio: The Ohio EPA issued an administrative order which alleged the transfer facility accepted hazardous waste manifested to a different facility and stored the wastes longer than 10 days. An administrative consent order was signed and a civil penalty of $8,000 paid. The matter was closed.

Examples of Unfounded Allegations Against Waste Management

At the June 19, 1985, Senate hearing, many unfounded allegations were made against WMI and CWM in testimony given by the Gulf Coast Coalition for Public Health ("Coalition"). Because that testimony is now part of the record of the Senate hearing, we respond below to the principal allegations to demonstrate the reckless disregard for the truth which is evident in that testimony. The Coalition's erroneous statements on the merits of ocean incineration are, in a broader context, rebutted by the enclosed comment on EPA's proposed regulations.

WMI employs five individuals in its Washington office who carry out some degree of lobbying (not 12, as indicated in the Coalition written statement ("Statement") at 4).

WMI did not buy the Vulcanus I in 1980 only to be "awakened to the realization that the European market would soon be drying up," Statement at 4, and therefore began a "headlong rush" to ocean incineration in the United States. WMI purchased the Vulcanus after many indications that ocean incineration technology was needed in the United States on a more regular basis than in the past and that its use would continue in Europe. The Carter Administration EPA Administrator and Secretary of Transportation, as well as other officials, had made statements in support of using the technology. Moreover, WMI built the Vulcanus II in 1982 specifically for the U.S. market -- hardly an action one would take if worried that Vulcanus I would be out of business. In Europe, waste quantities incinerated at sea have approximated 100,000 tons per year since 1980. WMI anticipates a growing use of the technology outside of the United States as well as here at home.

The Coalition states that a December, 1981, research burn on the Vulcanus failed, but that the test was deemed a success because of "coziness" between the EPA and CWM. Statement at 5. The Coalition's authority was an article in the Valley Morning Star. Yet the EPA

Incineration Study of March, 1985, reports for that research burn: "EPA calls results inconclusive due to inadequate amount of valid data obtained." Background Report I at 27. This cannot be construed as an effort to characterize the test as a success, and if EPA's characterization is an example of coziness with CWM, then we find it difficult to imagine what the Coalition would consider neutral. More importantly, a second PCB research burn was undertaken in August, 1982, and was a clear success. Id.

The Coalition states that dioxin, supposedly "a chemical inappropriate for ocean incineration," was "illegally burned aboard the Vulcanus." Statement at 5. The statement continues, reporting that EPA's Inspector General found that "[s]ignificant changes were made in the language of this permit after the public notification period expired..." Nevertheless, according to the Coalition, "The irregularity was ignored; flagrant violations went unprosecuted." The Coalition references the quotation above to an Inspector General's Report dated December 20, 1983. Just one line below the sentence quoted above by the Coalition, however, the Inspector General's report states that the change allowed "legal" incineration of dioxin. On page 6, the same report quotes EPA officials as indicating that "there were no adverse environmental consequences because destruction efficiencies for dioxin had been demonstrated by a previous incineration in 1977 of Herbicide Orange." Moreover, there is nothing improper about EPA making changes to a permit after the comment period; that is precisely how EPA routinely acts on the comments it receives.

The Coalition charges CWM with incinerating dioxin against the law when the authroity that is cited by the Coaltion states that the incineration of dioxin was lawful. If a law has been broken, it is the law of libel rather than the Ocean Dumping Act. In adding that dioxin is "inappropriate for ocean incineration," the Coalition again ignores the facts, and dismisses the pressing need to remove that dangerous chemical from our environment.

The Coalition testimony on this issue concluded by stating that the State of Alabama:

> felt strongly enough about that that they are conducting their own criminal investigation. And I might add, as of yesterday, the Vice President of the Southeast Region of Chemical Waste Management, plus the site manager at the Alabama site, have pleaded the Fifth Amendment. Senate Hearing Transcript at 48 and 49.

As Ms. Fruge knows, the State of Alabama Secrecy Act prohibits any person from commenting in any way on proceedings before a grand jury. Consequently, we cannot offer a response to the comment on those proceedings that she has made.

The Coalition statement suggests that CWM's retention of Mr. James Sanderson gave rise to a governmental conspiracy to assist CWM. Statement at 6. Mr. Sanderson's activities were in fact investigated by the Department of Justice; however, the Department found no violation of applicable statutes and regulations. The Coalition states that "the charges were dropped for insufficient evidence." Not content with due process, however, the Coalition statement continues:

"Interestingly, Ms. Saundra Brown Armstrong, Justice Department attorney handling this case, was elevated to the position of Commissioner of the Consumer Product Safety Commission." Even if true, we fail to see any relevance of these facts. But we suspect that the Coalition, like WMI, has no idea of the facts concerning Ms. Armstrong's employment history. It is also apparent that the Coalition is not particularly concerned either with the facts or with their relevance.

The Coalition states that TRW, Inc. of Redando Beach, California performed services on ocean incineration simutaneously for EPA and CWM "clearly smacking of ... impropriety at best. Again, no measures were taken to acknowledge or correct this injustice." Statement at 6.

CWM used a Dutch firm, TNO, to monitor the results of the first PCB research burn conducted aboard the Vulcanus I in December 1981. Certain problems arose concerning the testing procedures used by that firm, however, and EPA hired TRW, an independent consulting firm whose services are much in demand by both private industry and government, to monitor the second PCB test burn. At that time, TRW also was preparing a history of the testing performed on the Vulcanus ships and a position paper on the validity of the Principal Organic Hazardous Constituents ("POHC") Index of Incinerability for CWM. CWM had hired TRW to do this work because it believed that TRW, which had conducted testing under contract to EPA during the Shell burns and the 1977 Agent Orange burn, was the only firm in the United States with the experience in ocean incineration necessary to prepare these papers.

The validity of the monitoring conducted by TRW for EPA should not be questioned simply because TRW was performing different tasks, which overlapped in time, for CWM and EPA. First, EPA knew that CWM intended to hire TRW, and it encouraged CWM to have that work done, because the papers to be written by TRW would provide information needed in the permitting process.

Second, the monitoring and testing that TRW performed for EPA on the second PCB research burn were closely supervised by the Agency's own personnel and were performed in accordance with strict EPA sampling and test protocols, which were designed and approved by the agency prior to the initiation of work by TRW. Samples taken during the incineration process were packed in sealed containers on board the Vulcanus under the observation of EPA, and the containers were unsealed in TRW's laboratory also under observation by Agency personnel. An EPA employee spiked the samples, and EPA had the opportunity to verify TRW's sampling and testing procedures.

Third, when testing is done on any incineration system, the testing must be paid for or done by either the owner of the system or EPA. In most cases, the owner conducts or pays for the testing, as is generally the case with testing of land-based incinerators. Conceivably, one could always argue that if the owner pays for the testing, the test results are suspect. In this case, EPA chose to pay for the testing, a choice that should make the testing even less susceptible to allegations of conflict of interest. The fact the CWM had independent work done by TRW is of no more significance than if, as is normally done in such circumstances, CWM had paid TRW to do the testing on the PCB research burn.

Finally, and most important, TRW's objectivity and integrity are internationally recognized. They are, in fact, among that firm's most important assets; the mere suggestion of bias could cause substantial injury to TRW's reputation. Thus, TRW would not show favoritism in this matter toward CWM because such favoritism would represent an unreasonable risk to TRW's future viability as an independent consulting and testing organization. The Coalition's reckless statements fail to reflect any consideration of these obvious factors.

Chickasaw facility

The Coalition witness stated that construction of tanks approved for PCB storage is "clearly prohibited" if the tanks are below the 100 year flood water elevation. Senate Hearing Transcript at 50. The Coalition referred to a supposedly "circumventive" memorandum from Rita Lavelle to the EPA Regional Administrator stating that "if the facility is to be approved to handle PCBs the exercise of enforcement discretion by Region IV is necessary." Statement at 7.

Enforcement discretion on the 100 year flood plain rule is frequently exercised by EPA. We believe, for example, that such discretion was granted to Rollins Environmental Services for that company's facility in Deer Park, Texas. In the case of hazardous wastes regulated under RCRA, placement within the 100 year flood level is expressly authorized if the facility is designed to avoid the 100 year flood. For PCBs, which are regulated under TSCA, the same exception has been implemented through "enforcement discretion." In this particular instance, CWM requested such discretion from EPA Region IV, the regional office asked EPA headquarters for guidance, and Rita Lavelle was simply advising the region as to the established procedure it might wish to consider. The Coalition presumably was encouraged to make this allegation to trade upon the notoriety associated with Ms. Lavelle; her action, in this case at least, was no cause for excitement.

the Coalition's meeting

The Coalition stated that:

> In January, 1984, we were again reminded of the power wielded by CWM when funding for an ocean incineration debate set up by the EPA, was withdrawn after CWM attorneys charged Jack Ravan, Administrator of Water, with "violation of ethical standards of conduct." The Gulf Coast Coalition was ultimately left with a debt of about $10,000. Statement at 7.

CWM did object to federal funding of the event in question on several legal and ethical grounds. EPA eventually recognized the merits of the objections. The Coalition's statement does not address the merits of CWM's concerns, and would seem to imply that EPA should have ignored those concerns irrespective of their foundation.

This matter arose from the hearing on ocean incineration held in Brownsville, Texas, in 1983. At that time Jack Ravan, EPA Administrator of Water and hearing officer, rejected a demand by the Gulf Coast Coalition that Coalition-selected experts be permitted to sit on the podium with Ravan and EPA experts on incineration. Ravan agreed, however, to provide Coalition experts the opportunity to present their views at another meeting, date then unspecified, because the Coalition complained that they had been given inadequate opportunity to challenge the EPA experts.

CWM periodically inquired of EPA as to the date of a possible meeting. Finally, in January of 1984, CWM found out that Mr. Ravan had agreed to sponsor a televised debate in Texas, and to have EPA pay the expenses of the Gulf Coast Coalition experts.

Jodie Bernstein, Counsel for CWM, met with Ravan after having written the General Counsel of EPA pointing out that EPA lacked authority to pay for the participation of an interested party in a proceeding before the agency. The EPA General Counsel concurred and advised Ravan that he could not pay for the preparation of testimony or for the expenses of the Gulf Coast Coalition experts.

The televised discussion went on, but due to the short lead-time involved in establishing the date and program, CWM chose not to participate. CWM's challenge of Mr. Ravan's EPA witness payments spared EPA from making a serious breach of policy.

permit recommendations of 1984

The Coalition statement suggests that recommendations on issuance of research permits made by Mr. Steven Shatzow in March, 1984, were in some way illicit because the volume of waste roughly corresponded to PCBs held in storage at CWM's Emelle facility. Statement at 7 and 8. We note that the same persons who invariably claim that EPA research on the Vulcanus has been inadequate, such as the Coalition, also are given to challenging the use of larger volumes in research which facilitate obtaining data that is significant when evaluated statistically. Moreover, there is nothing improper about using the Emelle wastes for research purposes.

The PCBs at Emelle were not "stored illegally for over a year and a half" as alleged by the Coalition. The waste brought to Emelle was intended for incineration on the Vulcanus. When no permit was issued, it was not possible to dispose of the waste within the one year limit authorized for storage of liquid PCB wastes under TSCA. An administrative complaint was filed by the EPA and the State of Alabama in 1984, alleging that CWM stored liquid PCBs for more than one year after January 11, 1983. A consent decree was negotiated by CWM, EPA, and the State of Alabama and was approved by an Administrative Law Judge.

the regulation workshop

The Coalition witness went through the looking glass in describing a workshop held in June 1984:

> A regulation development workshop was held in June of 1984. Representatives from the Attorney Generals' offices of three states and numerous environmental groups were invited to provide input. Prior to the meeting, a fully developed set of regulations leaked to the opposition participants. When the EPA officials were confronted with the document, they denied any knowledge of its existence.
>
> During the rather emotional revelation, a member of industry leaped to his feet and was overheard exclaiming, "That's a privileged document. Only industry is supposed to have it." Senate Hearing Transcript at 50.

CWM representatives were present throughout this meeting. To our knowledge no advance copy of draft proposed regulations was leaked to any industry representatives. CWM had no advance copy prior to that meeting. A representative of Greenpeace did bring an advance copy of draft regulations to the meeting. Indeed, representatives of industry, including CWM, obtained from Greenpeace a copy of a document purporting to be draft regulations.

The chairman of the meeting, Steven Shatzow, from the Office of Water Standards and Regulations, stated that he had no knowledge of any draft regulations on ocean incineration. Apparently, a document containing draft ocean incineration regulations had been produced within EPA, without his knowledge. We cannot vouche for who within EPA knew or did not know of the draft regulations. CWM did not write them, know of them, or have a copy of them.

At no time did anyone from industry leap to his feet and exclaim: "That's a privileged document. Only industry is supposed to have it." CWM had representatives at the meeting the entire time, and the event simply did not happen. We assume that Mr. Shatzow and others at the meeting, including congressional staff, would corroborate our recollection.

myrid incidences

The Coalition lists as epliogue some seven "[m]yrid incidents" that supposedly "have further entrenched the public's opinion that this poorly researched technology will become a reality at all costs and with the convenient removal of any impeding obstacles." Written statement at 9 and 10. Among these incidences we select number 2 for illustration:

> 2. Gerald Chapman, an EPA employee, receptive to to all ocean incineration interests, received a shotgun blast through the front window of his home and believes it is related to his handling of this issue.

We are uncertain of the meaning that the Coalition has found in this sentence and of why the Coalition has been moved to submit this information to the United States Senate. If Mr. Chapman were indeed "receptive to all ocean incineration interests," we would not suppose that any of those interests would be responsible for the alleged blast. WMI, in any event, is not responsible for any such blast.

Perhaps the shotgun blast is offered as allegory of the surreptitious and evil forces that the Coalition seems to find in every corner of our industry and of the agency which regulates it. If so intended, the bizarre appearance of this offering may aptly reflect the degree of judgement and perception that the Coalition has mustered in its representations to the Senate about this company.

QUESTION 6

Seaburn, Inc., is offering a different type of incinerator than that used on other incinerator vessels.

— What, in your view, are the comparative advantages and disadvantages of two systems?

— Why has SeaBurn elected to equip their incinerators with scrubbers, while your company has not?

Answer

We believe that the Seaburn system of sea water scrubbers is less environmentally sound than the Vulcanus system:

1. The use of sea water scrubbers would inject a hot emission concentrate immediately behind the vessel. A hot concentrate of hydrochloric acid and metals would cause localized harmful effects on the surface of the marine environment. In the case of a Vulcanus-type

system, the stack gases are cooled and dispersed by the ambient air before they are absorbed by the sea water, thus assuring no impact on the marine environment.

We note that the Science Advisory Board of EPA has made this same point:

> Some new ocean incineration vessels under construction are designed to use sea water for scrubbing or quenching. This scrub water will entrain some combustion products and have the potential to form saturated solutions of hydrocarbons in water. If the scrub water is returned to the ocean, it will remain at the surface because is it warmer than the ambient sea water. Exposures to surface dwelling marine organisms (neuston) will occur at much higher concentrations of combustion products than through transfer of these products from the plume to the water surface. SAB Report, April 1985, at 21.

2. The carriage of waste in 144 separate containers, as apparently planned by Seaburn, poses difficulties not present in the Vulcanus system. Incineration is least efficient when waste feed is initiated from tanks to incinerators. Frequent shifting of waste from small volume containers would complicate incineration and could reduce overall combustion efficiency. The potential for fugitive emissions, or other leakage, during transport is partially a function of the number of openings from which chemicals might escape. A system with many small containers would provide many times more such openings, and opportunity for releases, than would the Vulcanus system. We suspect that the risk of leakage from loading the Vulcanus -- by pumping waste through a very durable hose -- is less than the likelihood of dropping containers when they are moved by crane from dock to a barge. We also

would suspect that a barge loaded with many containers and towed by a tug would be less maneuverable and more prone to accident than Vulcanus-type ships.

3. One of the main advantages of ocean incineration is the cost reduction possible because scrubbers are not used. Besides capital savings, a scrubber-less system allows for a greater throughput rate, thus reducing the unit cost.

4. The Vulcanus system has been operating effectively and safely for over 15 years. The SeaBurn system is not only untested, it has yet to be constructed.

5. We do not know why Seaburn made its choice. Ocean Combustion Service, the WMI subsidary, chose not to equip its system with scrubbers for the reasons discussed above.

Statement of Jerry D. Neel, Senior Vice President for
Operations Rollins Environmental Services, Inc.
Before the Subcommittee on Environmental
Pollution, Committee on Environment and Public Works
United States Senate
June 19, 1985

I appreciate the opportunity to appear before this Subcommittee to express the concerns of Rollins Environmental Services, Inc. about EPA's claim of authority to treat ocean incineration as a readily or equally available alternative to land-based disposal methods and to the study prepared for the EPA on the incineration market for liquid hazardous wastes. Whether or not an actual need for increased liquid hazardous waste incineration capacity exists and justifies the permitting of ocean incineration technology is the most fundamental issue in the extremely controversial process undertaken by EPA in its efforts to permit ocean incineration ships. The clear and consistent position of my company is that EPA has wrongly placed its priority on emphasizing a need for increased liquid incineration capacity. We strongly feel that the priority is in the need for capacity to deal with solid and highly viscous hazardous wastes.

Our judgments to this effect are buttressed by more than sixteen years experience in the incineration business. Marketing data, which we routinely gather and analyze, includes transportation manifests, mail questionnaires and telephone interviews with generators of hazardous wastes. Since the beginning of this year, Rollins has surveyed over 3,000 companies across the country. While we would consider a specific analysis of our results as proprietary for competitive reasons, the investment of our available capital dollars and research and development dollars proves we are preparing for a future hazardous waste market dominated by solid and highly viscous hazardous wastes. New incineration technology which we have developed is aimed directly at cost effective destruction of sludges. Also, the patented Rollins Environmental Vault is aimed at the massive quantities of contaminated soil we expect to see from Superfund sites. Finally, we are investing literally millions in new and upgraded rotary kilns to meet the demand for solids destruction capacity.

Today, however, our three land based incinerators are capable of releasing heat on the order of 100,000 BTUs per hour per unit. Such capacity represents approximately one third of our nation's major commercial incineration ability and at the outset may I state that Rollins has not achieved full usage of our incineration capacity in the liquid or solid cycle nor do we anticipate doing so in the foreseeable future. This statement most definitely applies to PCB incineration of liquids as well as to those regulated by RCRA.

Last year our three incinerators destroyed approximately 43% of all the hazardous wastes that were directed to commercial incineration. In the many years that I have been in the commercial hazardous wastes disposal business, I have personally been responsible for incineration of literally hundreds of millions of pounds of hazardous wastes.

In 1980, the Rollins subsidiary located outside Deer Park, Texas was awarded the first commercial permit for the incineration of polychlorinated biphenyl materials and we have been engaged in providing that service for the past five years. In 1984 alone, Rollins destroyed more than 45 million pounds of PCB contaminated material.

I wish to state at this point in my testimony that it is the position of Rollins that both the Marine Protection Research and Sanctions Act and the London Dumping Convention require EPA to undertake an exhaustive determination of the need for ocean incineration before issuing permits. A substantial factor in that determination must be the availability of land-based disposal alternatives.

I am attaching a letter addressed to this Subcommittee from our legal counsel, John Quarles, who formerly served as General Counsel and Deputy Administrator of the EPA. Mr. Quarles' letter addresses our legal contention and it is our desire to have the Subcommittee include this letter as part of the official hearing record.

To return now to the misplaced emphasis of EPA, Rollins believes that it is EPA's policy to prioritize recovery and recycling, as well as waste reduction activities. We believe that land-based incineration is a key component of formulating that policy. Let me add that it is also our view that EPA is doing a better job than it may realize in achieving that goal. With the discussion of RCRA's pending reauthorization came action in the generating industries well prior to RCRA's passage. The liquid hazardous wastes had to come out of the ground. As that process commenced over two years ago prices for alternative liquid disposal -- boilers, cement kilns and incinerators -- began to go up significantly. The waste generating industry (and EPA) suspected that would happen and began then to invest in reduction technologies, and recovery systems. All our marketing data supports this and we see no easing of the trend. The trend has a significant side effect, however: recovery techniques produce viscous, sludgey residues without significant BTU content, yet they are hazardous. It is this problem that rotary kiln land-based incinerators are designed to address. Ocean incinerators are not yet adaptable to this purpose.

We are faced, however, with a significant environmental question. Where should companies like Rollins turn for the energy supplies to destroy solid hazardous wastes?

Our answer has been to engineer systems which use liquid hazardous wastes to generate the necessary heat to destroy solid hazardous wastes. We believe that destroying waste with waste is the most environmentally sound approach to the hazardous waste problem as could be devised. One of the principal paradoxes that we feel is presented by the prospect of ocean incineration is that if the universe of liquid wastes with significant heat value moves offshore as a function of lowered cost that we will lose our ability to destroy waste with waste on land. Our alternative will be to produce the necessary heat to destroy toxic sludges and solids at our plants by dipping into our nation's fuel oil and natural gas supplies which would otherwise be used, for example, to heat homes. We believe that with the lower cost of ocean incineration that EPA will also lose a principal RCRA policy achievement in promoting recovery as well.

During 1984, I and others at Rollins were contacted by Booz-Allen & Hamilton regarding the incineration market study that the firm was preparing for EPA's Office of Policy & Program Evaluation. Representatives of Rollins met with Booz-Allen personnel and subsequently provided written comments to the draft study document in a letter dated November 15, 1984. I would like to emphasize that the reasons which were pointed out to Booz-Allen at that time regarding our view that their study grossly exaggerated the liquid incineration market are as valid today as they were nearly seven months ago.

Among the things that were pointed out at that time, were:

1. The incineration market should be studied covering all of the various physical forms of wastes to be incinerated. Some technical increases in incineration capacity can burn both solids and liquids, so that liquid capacity is dependent on the waste feed mix.
2. There is no data available on the heat content of the various wastes that will become available for incineration through future EPA regulations, so

existing incineration capacity available to burn these wastes is difficult to define.

3. Although the study projected future incineration markets, and also projected future at-sea incineration capacity, it did not project future land-based incineration capacity.
4. The study assumes that all liquid organic wastes that are incinerable will be incinerated. No allowance was made to anticipate that some portions of these wastes will be handled by other treatment/disposal or recovery methods.
5. PCB liquids are overstated in that handling procedures for transformers were assumed to be the same for capacitor volumes. In fact, no solvents are used in the destruction of capacitors.
6. The study did not consider that most PCB capacitors will have been disposed of over the next four to five years, and after this time, the volume of capacitors for disposal will be minimal.
7. The key assumptions, covering the effects of landfill restrictions on the amount of organic liquid waste that will be incinerated at commercial facilities, are questionable. It is felt that most of the organic wastes which are presently being landfilled are organic sludges and do not qualify as liquids.

8. The study did not address added incineration capacity on the generator's site. The "make or buy" decision by the generator is one that will greatly affect the off-site capacity needs over the next five years.
9. As the need to incinerate more low heat content, organic sludges and solids grows, organic liquid wastes will be required to ensure sufficient heat to meet the required destruction efficiencies.

Our analysis shows that additional incinerator capacity is needed in this country in two areas:

- Movable incinerators that have the capacities of burning sludges and solids. These units will be set up at waste sites that require remediation; i.e., Superfund sites, and incinerate the wastes at the site. This eliminates the cost and the risk of transporting large quantities of wastes to incinerator sites or to ports of debarcation.
- Large, fixed land-based incinerators that have the capabilities of burning sludges and solids and are large enough to benefit from economies of scale.

As we have noted, there will be increased amounts of wastes, predominantly sludges and solids that will require incineration under changing RCRA regulations and site remediation actions. There is not sufficient data available to quantify these increases, however, Rollins market analysis indicates the following changes in the hazardous waste markets over the next five years.

- PCB Liquids - Transformers containing PCB bearing liquids will be either retrofilled or taken out of service in such a way as to not tax land-based PCB incineration capacity. Since no new PCB transformers have been placed in service since 1977, the annual requirements for liquid PCB incineration will continue to decline. Also, since the present U.S. liquid PCB incinerator capacity is not fully utilized, there does not seem to be any immediate or long-range crisis for the disposal of liquid PCBs. Also, a number of companies are offering services that either chemically change the PCB molecule or physically remove the PCB molecule from the transformer oil, so further reducing the need for liquid PCB incineration.
- Other Liquid Hazardous Wastes - The volume of RCRA liquid hazardous wastes are slowly increasing in volume. However, capacity and technology for recycling and recovery of these materials is also increasing as other disposal options become more costly. Reduction of wastes at the source and recovery of wastes are functions of economies. Reducing the cost of liquid incineration with large at-sea incinerators will discourage recovery

and reduction. Commercial liquid incineration capacity is still not fully utilized and with other liquid treatment options, it does not seem that a high priority needs to be placed on increasing capacity for such materials in the United States.

The volume of sludge and solid hazardous waste that will require treatment and/or disposal is increasing because:

- Increased recycling and recovery techniques usually result in a sludgey residue.
- Superfund and other remedial actions will yield most principally sludges and contaminated soils amenable to land-based rotary kilns and certain portable incinerator designs.
- Increased land disposal restrictions will force organic sludges and solids from land disposal to incineration.
- Increase in wastes being classified as hazardous, which brings more wastes of all physical forms into the system.

Much of the sludge and solid wastes that will require incineration have low heat values and require supplemental fuel in order to maintain combustion process at the proper destruction efficiencies. Using higher heat content liquid wastes as the supplemental fuel is the most cost effective and environmentally sound approach as was discussed earlier.

These sludges and solids are difficult to store and handle and require special incineration equipment to burn; i.e., kilns.

Several movable incinerators have already been constructed in this country, and a number are in the planning stage. These units are designed to incinerate sludges and solids but will require liquids wastes as supplemental fuels.

Major waste generators are presently considering "make or buy" decisions as to whether they will build and operate their own incinerators or use commercial facilities. These decisions are going to have a great effect on the commercial hazardous waste incineration market from both a volume and type of waste point of view.

To recap our view of the U.S. incineration needs, the following trends are clear:

- Large increase in sludges/solid waste volumes to be incinerated.
- Decreasing PCB liquid incineration needs.
- Slight increase in volume of RCRA liquid wastes to be incinerated.
- Increased sludge/solid incineration capacity at fixed sites.
- Increased movable incineration capacity.
- Increased on-site incineration capacity.
- Little need for additional liquid incineration capacity.

- o Increased recycle/recovery of liquid wastes.
- o Increased source reduction of liquid wastes.

The heavy emphasis placed on increasing capacity for incineration of liquid hazardous wastes through ocean incineration is both misguided and unnecessary from the point of view of need.

Finally, we would be remiss if we were to fail to bring before the Subcommittee two issues of significant technical concern:

Combustion residence time is the measurement of how long hazardous wastes and its combustion products are exposed to 2,000 degrees (F) of heat. Under the Toxic Substances Control Act land-based incinerators are required to demonstrate two seconds residence time for PCB liquids. As a company, we are convinced that residence time, on the order of 2-3 seconds is a technical safeguard and a significant way to measure incinerator performance. However, the Science Advisory Board and EPA's background documents indicate that residence time can be minimized in technical significance. A review of the previous ocean testburn data, shows that all the Vulcanus ships achieve is about 1 second residence time. And this is true only by using the stack as part of the combustion furnace. Clearly this was not intended in the original furnace design. If one recalculates the residence time using only the furnace chamber, the residence time of the combustion gas drops significantly below 1 second. However, in our view, longer residence times enhance safety and control over the process. Since there are ocean incinerator designs which incorporate this kind of enhanced safety feature, why does EPA fail to examine it more carefully?

In Appendix E of the EPA Policy Office study, there is a discussion of the emissions from an ocean incinerator. Of technical concern are the products of incomplete combustion (PIC's) which are formed during the burning process.

On page nine, the findings show that PIC emissions are 34 times higher at sea than on land. While the EPA study only raises the difference in residence time as a possibility for this, I submit that reduced residence time is a significant reason for it. Also, on page 76 of the Policy Office's Summary and Conclusions document, Table 3 shows the expected quantities released annually from ocean incinerators to be 20.6 metric tons while land-based operations are expected to release 0.6 metric tons.

We believe this is not only a function of residence time, but also of air emissions control systems which are known as scrubbers.

The argument for not needing the gas scrubber at sea is the claimed compatibility of hydrochloric acid, a principal component of acid rain, with the sea. The lack of scrubbing equipment could contribute to the potential for forming acid rain. We are perplexed, to say the least, why EPA is not requiring scrubbers as a minimum safety feature when several designs of which they are aware, incorporate them. Many other dangerous elements are frequently present in waste mixtures and make scrubbers a well-advised feature of any incineration system.

In our view, EPA is adopting a technical position that fails to acknowledge the safest and best available technical designs.

Thank you very much for this opportunity to share these thoughts with you today.

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June 17, 1985

Honorable Chairman John H. Chafee
Subcommittee on Environmental Pollution
Committee on Environment and Public Works
United States Senate
Dirksen Office Building
Washington, D.C. 20510

Dear Chairman and Members of the Committee:

I am herewith forwarding on behalf of Rollins Environmental Services, Inc., our analysis of EPA's discussion in its recently proposed regulations for incineration at sea of the requirements under the Marine Protection, Research and Sanctuaries Act and the London Dumping Convention for determining that need exists for an ocean incineration permit. We have concluded that to the extent that EPA would reduce the requirements for showing need by treating ocean incineration as a readily or equally available alternative to land-based methods of disposal, its proposal is contrary to the requirements and intent of the statute. The MPRSA unmistakably requires that in determining need EPA must dedicate particular attention to the availability of practicable land-based alternatives to ocean incineration.

I would be pleased to supplement this discussion should you require it.

Sincerely,

John Quarles

John Quarles

Enclosure

LEGAL ANALYSIS: EPA'S PROPOSED IMPLEMENTATION OF NEEDS DETERMINATION REQUIRED BY MPRSA

Introduction

On February 28, 1985, EPA proposed new regulations governing permitting of ocean incineration of hazardous waste. 50 Fed. Reg. 8222. The extensive proposal would modify the existing procedural requirements for permit applications (including public comment and Agency review), and specify detailed performance standards for ocean incinerators.

EPA pursues a two-part object with this proposal. The first is to establish technical standards for ocean-borne incinerators. This effort is a necessary and valuable improvement on the ocean dumping regulations, which lack technical standards. EPA must, however, proceed further if it is to achieve the result of imposing the same or equally environmentally stringent regulations on ocean incineration as on land-based incineration facilities, including design specifications under TSCA, as we have discussed previously.

The second aim of EPA's proposed regulations is to significantly modify the existing requirements for ocean disposal of hazardous waste by substantially streamlining the permitting process. In this effort, EPA proposes to remove ocean incineration from the stricter procedures specified for ocean dumping permits and to process ocean incineration permit applications under its consolidated permit program. It proposes to eliminate certain opportunities for public comment on permit applications, including a hearing officer's report and the availability of an adjudicatory hearing for resolution of difficult technical issues. Most significantly, it also seeks to reduce the showing of need for ocean incineration that is required under current statutes.

EPA's proposal to streamline the permitting process may appear appropriate as an effort to license and encourage alternative waste treatment and disposal technologies. However, the Marine Protection, Research and Sanctuaries Act, 33 U.S.C. § 1401, *et seq.* ("MPRSA"), and London Dumping Convention ("LDC") 1/ make clear that the ocean may not be regarded as a ready or equal alternative to land-based treatment and disposal methods as EPA threatens to do.

EPA's Proposal to Make Ocean Incineration as Readily Available as Alternative Land-Based Technologies is Contrary to Law.

EPA seeks comment on the nature of the determination of need for an ocean incineration permit that the Administrator is required to make in reviewing applications under MPRSA. 2/

1/ The London Dumping Convention is officially known as the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

2/ EPA intends to use comments received as the basis for a separate generic proceeding on needs determination. 50 Fed. Reg. 8248.

However EPA's initial comments on the determination of need conflict with the Agency's mandate under the MPRSA to protect ocean resources.

EPA evidently seeks to make ocean incineration as readily available as land-based disposal alternatives. There is, however, no authority for this position and no rationale for replacing the existing standard for making a needs determination. EPA proposes to find, based on comparison of the environmental and health risks of ocean incineration with those associated with land-based alternatives, that need is "presumptively demonstrated if ocean incineration poses less or no greater risks than practicable land-based alternatives." 50 Fed. Reg. 8222, 8247. EPA indicates that it would grant permits for ocean incineration until new land-based technologies became available which clearly posed less risk than ocean incineration. Id. at 8248. In substance, then, EPA argues that if the risks associated with land and ocean-based disposal are equal, it will find that need for ocean incineration has been shown, regardless of the availability of adequate existing land-based capacity. This proposed equation does not accord with either the standards or intent of existing law, not to speak of the commonsense understanding of the term "need." The law unmistakably accords marine resources a special measure of protection.

EPA's permitting of ocean incineration is governed first by the London Dumping Convention, to which the United

States became a signatory in 1974. This treaty, directed broadly at restricting ocean disposal of hazardous waste, 3/ commits Contracting Parties to

> pledge themselves especially to take all practicable steps to prevent the pollution of the sea by the dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

LDC, Art. 1. This protective commitment is based on the recognition that the capacity of the sea to assimilate industrial waste is not unlimited and on the goal of assuring the preservation of its quality and resources. *Id.*, Preamble. To this end, the Convention requires that criteria be established for review of permit applications for ocean disposal. These criteria require consideration of environmental effects and of need, that is, of the *practical availability* of *alternative land-based methods* of treatment, disposal or elimination. *Id.*, Annex III(C) (emphasis added). This requirement reflects a presumption in favor of special protection of marine resources and against ocean disposal.

This presumption was extended in 1978 when the Convention was expanded to explicitly cover ocean incineration of

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3/ The forms of pollution regulated by the LDC are those from ocean-based exploration, land-based sources, and discharges through the atmosphere (*e.g.*, from incineration at sea). LDC, Preamble.

hazardous materials. The Third Consultative Meeting of Contracting Parties promulgated regulations requiring again that in reviewing permit applications, issuing authorities consider the need for the permit:

> Contracting Parties shall first consider the practical availability of alternative land-based methods of treatment, disposal or elimination or of treatment to render wastes or other matter less harmful before issuing a permit for incineration at sea. . . .

Addendum to Annex I, Regulation 2(2) (emphasis added). In addition, the regulations specified for the first time design and performance standards to be applied in permitting of ocean incineration. Id., Regulation 3, et seq. This regulation eliminates any doubt that the protective mandate of the LDC extends specifically to incineration at sea. This provision, while authorizing the issuance of permits for ocean incineration, makes clear that the ocean must be specially protected and establishes a presumption against permitting of ocean incineration.

This constraint on EPA's discretion to allow ocean incineration is reinforced by the Marine Protection, Research and Sanctuaries Act of 1972. This is the statute which creates EPA's authority to issue permits for ocean incineration of hazardous waste. 4/ The MPRSA was enacted in anticipation of the proposed

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4/ The Act extends its regulation of ocean disposal to ocean incineration of hazardous waste. "Ocean dumping" is defined broadly under the statute to include "any disposition of
(continued)

LDC and espoused its protective mandate. Congress amended the Act in 1974 to conform it to the requirements of the LDC and directed the Administrator to apply the standards and criteria imposed by the LDC on the United States "[t]o the extent he may do so without relaxing the requirements of this title," Act of Mar. 22, 1974, Pub. L. 93-254, 88 Stat. 51, codified at 33 U.S.C. § 1412(a), requiring the Administrator to meet or exceed the protective standards of the Convention.

In the MPRSA, Congress specified a finding of need as a determinative criterion in the Administrator's review of permit applications for ocean disposal. The Act authorizes the Administrator to issue permits for ocean disposal where he determines that the activity will not "unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities." § 1412(a). In making this determination, the Administrator is directed to consider the need for the proposed disposal and other factors,

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materials," including "incinerator residue." § 1402. EPA assumed authority over ocean incineration and atmospheric discharges at sea in 1974 at the urging of a principal author to the MPRSA, Representative John Dingell. He and others persuaded EPA that the requirements and policy of the LDC and MPRSA called for application of the constraints on ocean disposal to incineration at sea. US EPA, "Assessment of Incineration as a Treatment Method for Liquid Organic Hazrdous Wastes," Summary and Conclusions, at 24. EPA subsequently made explicit the application of its ocean dumping regulations to ocean incineration. Ocean Dumping; Proposed Revision of Regulations and Criteria, 41 Fed. Reg. 26644 (1976) (adding section 220.30(f) to clearly state coverage of ocean incineration).

including human health and environmental effects and alternative land-based methods of disposal and treatment. § 1412(a)(A), (B), (G). 5/ The Act imposes the burden of persuasion with respect to these issues on the permit applicant. Final Revision of Regulations and Criteria, 42 Fed. Reg. 2462, 2465 (1977).

Congress manifested a growing concern for special protection of marine resources in subsequent amendments. Thus, in 1977, Congress amended the Act to establish a prospective ban on ocean dumping of sewage sludge that unreasonably degraded the environment. Act Nov. 4, 1977, Pub. L. 95-153, § 4, 91 Stat. 1255, codified at 33 U.S.C. § 1412a. Congress imposed this prohibition despite its recognition that the sludge subject to the ban was being dumped by municipalities which in fact had no practicable land-based alternatives. See 42 Fed. Reg. 2462-2464 (1977) (EPA discussion of need for interim ocean disposal permits). In 1980 amendments, it prohibited in addition, after 1981, dumping of industrial wastes. Act of Dec. 22, 1980, Pub. L. 96-572, § 2 94 Stat. 3344, codified at 33 U.S.C. § 1412a.

Further, Congress showed its insistent concern for special protection of ocean resources during debates on the 1980

5/ EPA codified the use of enumerated factors and criteria for evaluating need for permitting of ocean disposal in its regulations at 40 C.F.R. §§ 227.14-227.16. The need for permitting is to be evaluated in terms of other feasible disposal alternatives and their environmental effects. To determine need the Administrator must find that no practicable alternative methods of disposal exist which present less risk than ocean disposal.

amendments. It was proposed at that time that instead of a ban on dumping, the Administrator be directed to balance the impacts of ocean disposal against those of land disposal and choose the least harmful alternative. House Rept. 96-894, Pt. 1, 96th Cong., 1st Sess. (1980), reprinted in [1980] U.S. Code Cong. & Ad. News 2572, 2574. The proposal was defeated and the ban was imposed. Id. The Committee report on the House amendments significantly tightening regulation of ocean disposal identified as their basis the increase in population growth and industrial development in coastal areas that would maintain pressure for ocean disposal of wastes at a time when national dependence on the ocean was growing. Id. at 2592. The 1980 amendments and their rationale indicate Congress' implementation of a presumption against ocean disposal.

The MPRSA and LDC make unambiguously clear that marine resources must be specially protected. Congress has in fact progressively sharpened restrictions on ocean dumping. These restrictions are--and have always been--equally applicable to permitting of direct dumping and ocean incineration. To the extent that EPA seeks to make ocean incineration an equally available alternative to land-based waste treatment and disposal methods, it violates the Act and its policies.

EPA's proposed presumption that need will be shown if the risks of ocean- and land-based incineration are equal is untenable in view of this authority. The MPRSA authorizes EPA to issue permits for ocean incineration but only upon a determination of need in the name manner as the determination of need for direct dumping. That determination must consider the availability of land-based alternatives, in addition to comparative risks. Directly revelant to this determination of need is the reality that excess land-based incinerator capacity currently exists and that substantial additional capacity is currently online. Rollins will document these facts separately. Rollins submits on the basis of these facts that EPA cannot currently make the required showing of need to satisfy the MPRSA at this time.

Rollins Environmental Services, Inc.
One Rollins Plaza, Wilmington, Delaware 19899
(302) 429-2980

Rollins

July 12, 1985

The Honorable Lloyd Bentsen
Ranking Minority Member
Committee on Environment & Public Works
United States Senate
Washington, DC 20510

Dear Senator Bentsen:

This will respond to your correspondence of June 24 which requests that Mr. Jerry D. Neel, Senior Vice President for Operations of Rollins Environmental Services, Inc. respond to certain questions submitted by you and Senator Lautenberg. As you know, your request was a follow up to Mr. Neel's appearance before the Subcommittee on Environmental Pollution on June 19 of this year.

Enclosed with this letter please find Mr. Neel's responses for the record. On behalf of Rollins Environmental Services, please accept our appreciation for the opportunity to participate in the process of determining whether or not a program of ocean incineration of hazardous liquid wastes is necessary and safe. If there is any further service which we may provide, please feel free to call on us at any time.

Sincerely,

Thomas R. Blank

Thomas R. Blank
Director of External Affairs

TRB/clf
Enclosures

QUESTIONS SUBMITTED BY SENATOR LAUTENBERG

1. Ocean Incineration proponents argue that low energy liquid waste would be of little value in land based rotary kiln incineration and should be incinerated at sea. Do you agree?

   Answer: The universe of liquid hazardous waste that Rollins has seen in the marketplace over the last 15 years of operating three incinerators has an average heat content of about 10,000 Btu's per pound. This is good support fuel and is needed to assist in the incineration of solids and sludges. Since this universe represents the same markets that will be serviced by ocean incineration, there is no reason to believe that the average Btu content of the materials handled by the ocean incinerators would be any lower. In fact, if PCBs are incinerated, the average PCB liquids that are in the U.S. marketplace are running about 15,000 Btu's per pound, which is an excellent support fuel.

2. What plans do you have for additional land-based incinerators in New Jersey.

   Answer: Rollins Environmental Services New Jersey Inc., has submitted to the State of New Jersey, a completed Part B application and is anticipating that a demonstration burn for technical review and compliance purposes will be conducted in the near future. Rollins is planning capacity expansion and has so informed the New Jersey Department of Environmental Protection of its intentions through the Part B process. Anticipated expansions at the Rollins' Logan Township site are as follows:

   a) Rollins' current rotary kiln incineration capacity is approximately 100,000 BTUs per hour, and last year the New Jersey facility destroyed nearly 60,000,000 pounds of hazardous wastes. As part of the Part B process, Rollins is proposing to replace its existing kiln with a new state of the art design which may sacrifice some heat release but will provide Rollins with the ability to better handle solids and sludges which we believe will be seen in the State of New Jersey in the largest quantities in the years ahead. By being better able to handle solids in New Jersey, Rollins will be making technical capacity adjustments that sacrifice liquid hazardous wastes capacity in favor of what we judge will be the state's greatest need.

b) Rollins has developed new incineration technology known as the Rollins Fluidized Bed Incinerator. This new design is aimed at what Rollins believes represents the most significant hazardous waste problem for New Jersey both in terms of remedial actions and industrial wastes. That problem will be hazardous sludges, other highly viscous wastes which are not pumpable, and solid chemical wastes. In the Rollins' Part B application, Rollins is proposing to install one of its new fluidized bed incinerators at its Logan facility. As proposed, this new design would expand Rollins' existing capacity by approximately 150 tons per day. The research and development phase of the Rollins Fluidized Bed Incinerator has been conducted at the Rollins New Jersey facility during the last several years with a pilot unit installed at the plant capable of destroying approximately 1,000 pounds of waste per day.

3. The New Jersey Hazardous Waste Facility Siting Commission Report (page III) says that there will be a greater use of incineration as a result of the restrictions on land disposal imposed by the 1984 RCRA amendments. Do you agree with this finding?

   Answer: Yes, there will be greater use of incineration as a result of the restrictions of land disposal imposed by the 1984 RCRA amendments. However, the waste diverted from landfills to incinerators will be mainly sludges and solids and these cannot be incinerated with the present ocean incineration technology. There will be a shortfall of sludges and solids incineration capacity unless EPA expedites additional incineration capacity permits.

4. EPA's Science Advisory Board Report raised numerous questions about incineration. How would you respond to each of the following SAB findings:

   * Research on incinerator performance has occurred only under optimal burn conditions. Short-term incinerator operations under upset conditions can greatly increase incinerator loadings of the environment.

     Answer: The SAB concern regarding sub-optimal burn conditions is justified. Ocean incineration, as typified by the Vulcanus, does not have safety features to offset sub-optimal burn conditions. For example, interruption of feed flow continuity could be a cause of sub-optimal conditions. Likewise, variations in combustion air supply and incineration temperature could be a cause for such concern. One of the arguments which has been presented many times now is that the Vulcanus is not provided with a secondary combustion chamber to provide assurance that optimal burning will take place even though momentary upsets occur in the primary combustion chamber. The land-based incinerator is equipped with monitoring of the exit gas from the secondary combustion chamber. This provides the means to shut off waste supply in the event of aberrations in combustion conditions. The extra residence time of the exhaust gas in that chamber plus the ability to obtain more representative gas sampling provides these assurances. If 99.99% destruction is required and is important, then a drop in destruction efficiency to 99.0% increases emissions by a factor of 100. Such an aberration is possible and probable in the ocean incinerator without the secondary combustion chamber.

* EPA's program to assess the exposures of organisms to chemicals from incinerators has been inadequate.

Answer: Very little has been done, if anything, by the EPA to assess the exposure of organisms to chemicals from ocean incinerators. On the other hand, there has been some work done to check ground level concentrations of various parameters downwind of land-based incinerators. In the absence of factual data concerning the impact of ocean incinerators on marine organisms, one cannot draw conclusions; accordingly, it would seem advisable to set up an appropriate program to assess such impacts.

* The toxicities of emissions from incinerators are largely unknow.

* Answer: It is true that very little data has been gathered to quantify the toxicities of emissions from incinerators.

* While there is no documentation that incinerators result in adverse ecologicial effects or significant acute human health hazards, monitoring programs used so far were "few and narrow in scope."; and EPA's use of destruction efficiency as a measure of the effecitiveness of incineration does not completely analyze incineration emissions and therefore, is not an adequate basis for developing exposure assessments.

Answer: Land-based incinerators have been monitored frequently for the presence of chemicals in the emissions, based upon the presence of such chemicals in the waste feeds, e.g. PCBs. However, very little work has been done to identify and quantify products of incomplete combustion. Again, this raises the issue of providing the design features which will more nearly guarantee the elimination of PIC's. The work done for the SAB indicates a much higher concentration of PIC's from the ocean incinerator than has been observed from land-based incinerators built and operated in accord with EPA regulations.

It is true that the monitoring programs used so far for incinerators are "few and narrow in scope"; however, a properly operated land-based incinerator has not been shown to create "significant acute human health hazards". In fact, a properly designed and operated land-based incinerator can be shown to function such that emissions conform with all established health standards.

QUESTIONS SUBMITTED BY SENATOR BENTSEN

1. What is the volume of polychlorinated biphenyl (PCB) material stored in the United States today?

Answer: We do not make our internal estimates publicly available as a matter of company policy.

How long will it take land-based incinerators, in addition to their other business, to incinerate this material?

Answer: We have consistently stated that we feel that land-based incinerators can handle the nation's PCB incineration needs over the next decade. We also believe that the greatest demand will be over the next five years and that less and less available incineration capacity will be needed for PCB materials after that time.

Do you have projections of what the future capacity will be?

Answer: There will almost certainly be some additional PCB incineration capacity become available on-site, non commercial. There is no way to accurately assess this capacity increase except to undertake a review of pending incineration applications at the USEPA regional level. Our estimate would be that existing commercial capacity for PCB incineration will approximately double within the next two years. However, in terms of PCB destruction, it is not appropriate to consider only increased incineration capability and we are attaching an article which appeared in the July 8 edition of Chemical Engineering magazine which is pertinent to the capacity question.*

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* Retained in committee files.

How many more land-based incinerators are contemplated on site and off site?

Answer: We are unable to suggest an estimate of additional land-based incinerators that will be constructed on and off site that we feel would amount to a useful guide for the committee.

2. What percentage of your land-based capacity is used for the following categories of waste?

a)Liquids

b)Solids

c)Sludges

Answer: The percent of our land-based capacity is controlled by design of our incineration units, and 70% of that capacity is for liquid hazardous waste and 30% is for solids and sludges.

3. Please describe your local storage facilities and, if you have them, your regional storage facilities.

SUMMARY OF FACILITY STORAGE CAPACITY

Storage Unit

	PCB (Polychlorinated biphenyls)			RCRA		
	Containers			Containers		
Facility	No. of Drums	Gallons	Tankage Gallons	No. of Drums	Gallons	Tankage Gallons
RES (LA) Baton Rouge	0	0	0	1,700	95,000	260,000
RES of LA Deep Well	0	0	0	10	550	125,000
RES (NJ) Logan	0	0	0	1,640	90,000	312,000
RES (TX) Deer Park	1,000	55,000	450,000	4,200	231,000	50,000

4. Please provide for the record a history of notifications of violations, penalties assessed, and litigation the company has been involved in to the extent is is not privileged.

Rollins Environmental Services
Baton Rouge, Louisiana

FINES

ITEM	DATE	TITLE	DESCRIPTION
A	April 22, 1980	Findings, Order of Performance Guidelines and Schedule for Compliance	Comprehensive site compliance order calling for plan of action.
B	May 13, 1980	Plan of Action	Submitted in response to order of April 22, 1980.
C	May 30, 1980	Emergency Cease and Desist Order	Cease unpermitted waste water discharge.
D	August 26, 1980	Findings, Order of Compliance	Hy-Purle and Plot 5 cleanup.
E	October 21, 1980	Notice of Violation and Compliance Order	Cease unpermitted offsite drainage of rainwater.
F	October 25, 1980	Proceedings under Chapter II, Title 30, R.S. 30:1051, Et Seq.	Control of offsite odors.
G	December 30, 1980	Compliance Schedule and Performance Guidelines	Interim Status facilities to meet federal guidelines.
H	June 17, 1981	Settlement Stipulation	Landfarm Settlement.
I	June 23, 1981	Order of Compliance	Order adopting landfarm settlement.
J	April 7, 1982	Findings of Fact and Notice of Violation	Odor violation and landfill cell rework procedure.
K	May 4, 1982	Amended Compliance Order	Landfill cell rework procedure amending April 7, 1982 order.

ITEM	DATE	TITLE	DESCRIPTION
L	January 20, 1983	Order	Reduction of fugitive emissions: basin enclosure, strainer enclosure, phase separation.
M	April 14, 1983	Order	New landfill criteria established.
N	June 20, 1983	Order	Reduction of fugitive emissions: enclosed mix facility and other odor reduction procedures.
O	January 31, 1984	Order	Reduction of fugitive emissions: leachate tank/treatment, covering of receiving basins, enclosed strainer environment, supplements January 20, 1983 order.
P	February 21, 1984	Amended Order	Mix building testing and ororiferous material handling protocol - amends June 20, 1983 order.
Q	November 28, 1984	Compliance Order	Prohibits trial burn of PCBs.
R	June 14, 1985	Consent Agreement	Additional groundwater monitoring.

$40,000 is the only monitary penalty that a regulatory agency has levied against RES (LA).

N.J.A.C.7:26-12.2(g)

DISCLOSURE STATEMENT

G.1 DISCLOSURE STATEMENT

A list is submitted in this section which includes the names and addresses of all officers, directors, or partners of the business concern seeking the permit and all persons or businesses concerned holding more than ten percent of the equity in or more than ten percent of the liability of the business concern seeking the permit.

In addition, a list has been prepared which explains any judgment of liability or conviction under any state or federal statute or local ordinance concerning hazardous waste management against the business concern seeking a permit or against any key employee, officer, director, or partner of the business concern.

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Bridgeport, NJ 08014

Officers:

Donald C. Matter Vice President
P.O. Box 337
Bridgeport, New Jersey 08014

John C. Peet, Jr., Secretary
One Rollins Plaza, 2200 Concord Pike
Wilmington, DE 19803

J. Carlisle Peet, III, Assistant Secretary
One Rollins Plaza, 2200 Concord Pike
Wilmington, DE 19803

Jo-Ann Dunn
Assistant Secretary
P.O. Box 337
Bridgeport, New Jersey 08014

Director:

Donald C. Matter
P.O. Box 337
Bridgeport, New Jersey 08014

Owners of more than 10% of the Equity

Rollins Environmental Services, Inc.
One Rollins Plaza
2200 Concord Pike
Wilmington, DE 19803

Officers:

All Addresses: P.O. Box 2349, Wilmington, DE 19899

Darrell M. Trent
Chairman of the Board, Chief Executive Officer, President

John W. Rollins, Jr.
Vice Chairman of the Board

William B. Philipbar, Jr.
Vice Chairman of the Board

Jerry D. Neel
Senior Vice President

1. An Order was issued on March 3, 1970. It alleged that Rollins-Purle, Inc., was in violation of Chapter IX, Sections 3.1 and 3.2 of the New Jersey Air Pollution Control Code and ordered that Rollins-Purle, Inc., cease said alleged violations.

2. A notice of prosecution was issued on September 14, 1970. It was alleged that Rollins-Purle, Inc., was in violation of Chapter IX, Sections 3.1 and 3.2 of the New Jersey Air Pollution Control Code. A settlement of $200.00 was offered by the NJDEP.

3. A notice of prosecution was issued on November 9, 1970. It was alleged that Rollins-Purle, Inc., was in violation of Chapter IX, Sections 3.1 and 3.2 of the New Jersey Air Pollution Control Code.

4. On May 17, 1971, a complaint was filed against Rollins-Purle, Inc. The Complaint alleged that Rollins-Purle, Inc., was in violation of Sections 3.1 and 3.2 of Chapter IX of the Code.

5. On December 13, 1971, an Order was issued to Rollins-Purle, Inc. The Order alleged that Rollins-Purle, Inc., was in violation of Chapter VIII, Section 2.4 of the New Jersey Air Pollution Control Code, and ordered Rollins-Purle, Inc., to cease the alleged violation.

6. On December 7, 1971, an Order was issued alleging that Rollins-Purle, Inc., was in violation of Chapter XI, Section 3.4 of the New Jersey Air Pollution Control Code, and ordered Rollins-Purle, Inc., to cease the alleged violation.

7. On February 4, 1972, a complaint in the Superior Court of New Jersey, Chancery Division - Gloucester County, Docket No. C-1716-71, against Rollins-Purle, Inc., in which it was alleged that Rollins-Purle, Inc., was in operation in violation of Chapter IX, Section 3.2 of the Code.

8. On September 1, 1974, Rollins Environmental Services, Inc., entered into a Consent Judgment with the NJDEP in which RES agreed to pay a fine of $60,000 for certain violations of the NJSA 26:2C-1 et seq.

9. On October 5, 1972, an amended order was issued to Rollins-Purle, Inc. In that Order, it was alleged that Rollins-Purle, Inc., was in violation of Chapter VIII, Section 2.4 of the New Jersey Air Pollution Control Code, and Rollins-Purle, Inc., was ordered to so comply.

10. A notice of prosecution was issued on April 28, 1975. It was alleged that RES(NJ) violated NJAC 7:27-8.3(a).

11. In April, 1975, a Notice of Prosecution was issued, alleging that RES, Inc., violated Chapter 27, Section 7:27 - 8.3A. A settlement of $200.00 was agreed upon.

12. On June 20, 1975, Rollins Environmental Services, Inc., entered into a stipulation with the Delaware River Basin Commission in which RES paid $10,000.

13. A notice of prosecution was issued on August 4, 1975. It was alleged that RES(NJ) violated NJAC 7:27 - 11.3(d). The allegation was settled upon the payment of $100.00.

14. On November 3, 1976, Rollins Environmental Services, Inc., was alleged to have violated Title 7, Chapter 27, Subchapter 8, Section 8.3(e) 2 of the NJAC. No fine was involved.

15. An order was issued on November 4, 1976. It was alleged that RES(NJ) violated NJAC Title 7, Chapter 27, Subchapter 8, Section 8.3(a) and (b).

16. An Order was issued on January 10, 1977. It was alleged that RES(NJ) was in violation of NJAC, Title 7, Chapter 27, Subchapter 8, Section 8.3(e)(2), and RES(NJ) was ordered to cease violation on or before January 25, 1977. RES(NJ) did, in fact, cease violation on December 3, 1976.

17. On June 9, 1977, Rollins Environmental Services, Inc., was alleged to have violated NJAC, Title 7, Chapter 27, Section 11.2(b)(2).

18. A notice of prosecution was issued on July 1, 1977. It was alleged that RES(NJ) violated NJAC, Title 7, Chapter 27, Subchapter 11, Section 11.3(d).

19. A notice of prosecution #13831 was issued on December 14, 1977. It was alleged that RES(NJ) violated NJAC Title 7, Chapter 27, Subchapter 8, Section 8.3(a) and (b). The allegation was settled upon the payment of $400.00.

20. A notice of prosecution was issued on December 23, 1977. It was alleged that RES(NJ) violated NJAC, Title 7, Chapter 27, Subchapter 11, Section 11.3(d).

21. A notice of prosecution was issued on April 12, 1978. It was alleged that RES(NJ) was in violation of NJSA 26:2C-9.1.

22. On May 9, 1978, Rollins Environmental Services, Inc., was alleged to have violated Section 311 (j)(1)(C) of the Federal Water Pollution Control Act and was fined $10,000.

23. A Notice of Violation and Stop Order was issued on June 9, 1978. It was alleged that Rollins-Purle, Inc. (which corporation no longer existed) was in violation of NJSA 12:5-3.

24. On February 11, 1980, Rollins Environmental Services (NJ), Inc., was alleged to have violated Section 113(b) of 42 U.S.C. Section 7413(b).

25. An Administrative Order and Notice of Civil Administrative Penalty Assessment was issued on October 21, 1980. It was alleged that RES, Inc., was in violation of NJSA 58:10A-6a. A settlement of $1,475.00 was paid by RES(NJ).

26. On January 28, 1981, Rollins Environmental Services (NJ), Inc., was alleged to have violated NJSA:13:1E-10 and paid as a settlement $1,000.

27. On February 25, 1981, Rollins Environmental Services (NJ), Inc., was alleged to have violated NJSA 7:27 - 8.3(e)(1) and was fined $200.00.

28. A notice of prosecution was issued on April 2, 1981. It was alleged that RES(NJ) was in violation of Title 7, Chapter 27, Subchapter 8, Section 8.3(e) of the NJAC. A settlement of $1,000.00 was agreed upon.

29. On May 11, 1981, Rollins Environmental Services (NJ) was alleged to have violated Section 6(e)(1) of the TSCA regulations governing the disposal and marking of polychlorinated biphenyls and was fined $24,000. The incident took place at the Bridgeport Tank Farm where waste from the 1977 explosion will be stored.

30. Logan Township and Logan Township Board of Health v. Rollins Environmental Services (NJ), Inc. RES (NJ) was sued over the question of whether the operation of the RES(NJ) facility pursuant to a temporary operating authorization by the NJDEP was valid for more than one year. The case was settled on January 4, 1983.

31. September 23, 1981. An action was filed under the caption, United States of America v. Charles Price et al., including Rollins Environmental Services (NJ), Inc., in the United States District Court for the District of New Jersey alleging among other things that RES(NJ) was a generator of hazardous waste deposited at the Price landfill. EPA is attempting to collect cleanup costs from a multitude of generators and transporters.

32. April 16, 1982. An action was filed under the caption Melvin Johnson, et al. v. Rollins Environmental Services (NJ), Inc., et al., in the Superior Court of New Jersey, Atlantic County. It is a class action for approximately 80 residents living near the Price landfill. It is alleged that due to improper disposal of hazardous wastes the plaintiff's drinking water supply has been polluted causing physical and emotional damages.

33. Fifteen times between December 3, 1982, and March 4, 1983, RES(NJ) was charged with a violation under NJAC 7:26-7.6(a)(2) in which it was alleged that manifests were improperly filled out. The total amount of fines paid for these 15 violations was $1,200.00.

34. On April 27, 1983, it was alleged that RES(NJ) utilized a transporter which was not properly registered by the NJDEP in violation of NJAC 7:26-7.4(e)(2). No penalty was involved.

35. On January 28, 1982, it was alleged that RES(NJ) violated NJAC 7:27-9.3(e)1 by using blending and receiving tanks without fulfilling all conditions. RES(NJ) was fined $400.00.

36. On September 30, 1982, it was alleged that RES(NJ) violated NJAC 7:26-1 et seq. by accepting hazardous waste from a mobile dredging and pumping company vehicle which failed to display its NJSWA registration numbers. No penalty was involved.

37. On February 17, 1983, it was alleged that RES(NJ) violated NJAC 7:26-7.6(a)2. The penalty was $100.00.

38. Notices of Violation were issued on April 11, May 17, May 19 and June 17, 1983, alleging that RES(NJ), Inc., was in violation of NJAC 7:26-7.6(a)2.

39. On June 22, 1983, it was alleged that RES(NJ) violated NJAC 7:25-7.6(a)2 by accepting hazardous waste which was not accompanied by a properly completed manifest. The penalty was $10,500.00. A settlement of $100 was agreed upon.

40. On October 5, 6, 7, and 21, 1983, it was alleged that RES(NJ) violated NJAC 7:27 - 9.3(e) by incinerating a waste without adhering to all applicable conditions. The penalty was $1,600.00.

41. A Notice of Violation was issued on January 26, 1984. It alleged that RES(NJ), Inc., was in violation of NJAC 7:26-7.6(a)2.

42. On April 13 1984, RES(NJ) received a Notice of Violation alleging that RES(NJ) violated NJAC 7:26-2.2(a) by not paying its registration fee. However, RES(NJ) showed that it had, in fact, paid.

43. On April 28 and 30, 1984, it was alleged that RES(NJ) violated NJAC 7:27-8.3(e)(1) by using the incinerator without abiding by all conditions. The penalty assessed was $800.00.

44. On May 15, 1984, it was alleged that RES(NJ) violated NJAC 7:27-8.3(e)(1) by using the incinerator without abiding by all conditions. The penalty assessed was $800.00.

45. On July 23, 1984, RES(NJ) received a Complaint from the United States EPA alleging that RES(NJ) had violated Section 6(e) of TSCA and the regulations promulgated thereto. The parties are still negotiating a settlement.

46. On August 29, 1984, an action was served under the caption Adkisson et al. v. RES(NJ) et al in the Superior Court of New Jersey, Atlantic County, alleging among other things that residents near the Price landfill have been damaged by the improper disposal of hazardous waste.

47. On August 31, 1984, an action was served under the caption Kenny et al. v. RES (NJ) et al in the Superior Court of New Jersey, Middlesex County alleging among other things that residents near the Kin Buc landfill in Edison, New Jersey, have been damaged by the improper disposal of hazardous waste.

7-1-85 TO: Mr. R. Buchanan FROM: D. Persons (1 pg. only)

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1. On January 24, 1973, RES(TX) paid a fine of Five Hundred Dollars ($500.00) for emitting odors.

2. On April 9, 1973, RES(TX) paid a fine of Five Hundred Dollars ($500.00) for a violation of its TWQB permit.

3. On September 8, 1973, RES(TX) paid a fine of Five Hundred Dollars ($500.00) for emitting odors.

4. On September 26, 1973, RES(TX) paid a fine of Five Hundred Dollars ($500.00) for emitting odors.

5. In 1974, RES(TX) was ordered to pay Twenty Four Thousand Dollars ($24,000.00) by the District Court of Harris County, Texas, the 55th Judicial District. This was an action prosecuted by the State of Texas against RES(TX) for violations of the Texas Clean Air Act.

6. An action was brought by Harris county, Texas against RES(TX) in the District Court of Harris County, 133rd Judicial District No. 1,065,763, for violation of the Texas Clean Air Act. Pursuant to a consent decree, RES(TX) paid a fine of Five Thousand Dollars ($5,000.00) to Harris County and Five Thousand Dollars ($5,000.00) to the State of Texas.

7. On August 22, 1974, RES(TX) was accused of violating its TWQB permit. This action was dismissed.

8. On September 20, 1974, RES(TX) paid a Five Hundred Dollar ($500.00) fine for violation of the Texas Clean Air Act.

9. On February 11, 1975, RES(TX) paid a fine of Five Hundred Dollars ($500.00) for emitting odors and fumes.

10. On April 8, 1975, RES(TX) paid a fine of Five Hundred Dollars ($500.00) for emitting an odor.

11. On April 9, 1975, RES(TX) paid a Five Hundred Dollar ($500.00) fine for emitting an odor.

13. On May 11, 1975, RES(TX) paid a fine of Five Hundred Dollars ($500.00) for emitting odors and fumes.

14. On May 13, 1975, RES(TX) paid a fine of Five Hundred Dollars ($500.00) for emitting odors and fumes.

15. On June 19, 1975, RES(TX) was accused of failing to meet the requirements of Texas Water Quality Board Order No. 70-0828-5. This action was dismissed with no fine assessed.

16. On October 21, 1981, the Texas Air Control Board cited RES(TX) for a violation on September 5 and 6, 1981 of Board Regulation VI, Rule 116.4 by failure to suspend incineration of PCB's during an Air Stagnation Advisory. Signed and paid $2,000.00 Agreed Judgement (NO. 82-4385) on February 1, 1982.

17. On June 8, 1984, an action was brought under the caption Chaplin et al. v. RES(TX) et al. in the U. S. District Court, Southern District of Texas, alleging that residents of east Harris County had suffered damages as a result of the use of waste disposal sites in east Harris County.

SeaBurn Inc.

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STATEMENT

BY

VINCENT G. GREY, PRESIDENT

SEABURN INC.

I am Vincent G. Grey, President, SeaBurn, Inc. With me today are Mr. Carroll N. Bjornson, Executive Vice President, Stolt Nielsen, Inc.; Mr. Paul V. DeGregorio, Vice President, SeaBurn, Inc.; and Mrs. Terry Matthews, President, Matthews Consulting & Construction, Inc. In my statement I will first be outlining for the Subcommittee the SeaBurn approach to ocean incineration. I must do this because our approach is a totally different method for collecting waste, transferring it to a vessel and even the vessel design. It is necessary to know something of the Seaburn approach in order to appreciate some of the concerns we have about Government Regulations. Secondly, I will respond to issues and questions about SeaBurn which were raised in your letter of invitation to appear here.

SeaBurn Approach

The SeaBurn approach to ocean incineration is based on the utilization of standard 20 foot tank containers for collection and transport of hazardous wastes. SeaBurn will position a 5,200 gallon stainless steel container at the generator's facility and, when the container is full, it will be sealed, placarded and transported to a nearby seaport by rail, barge, or truck. This ability to be interchanged between modes of transport is called "intermodal". Once at the port facility, the container will be placed on board a sea-going vessel which accomodates 144 of these intermodal containers. The first and only time the waste leaves the container is as it is being fed into one of the four incinerators on the vessel. SeaBurn's waste disposal operation will be conducted only at designated burn sites approved by the U.S. Environmental Protection Agency.

Our approach to hazardous waste destruction permits independent handling of each waste yet provides for total SeaBurn control immediately at the outset. It eliminates the need for portside blending of wastes; and, hence, provides a "cradle to grave" management and accountability of hazardous wastes entering the system.

SeaBurn has applied for a patent covering this approach to ocean incineration.

Let me now highlight certain elements in the system.

Containers - Each SeaBurn container will be inspected, certified and marked according to U.S. Coast Guard IM-101 requirements. The containers will further meet requirements set forth under the International Convention for Safe Containers. The tanks will be pressure-tested to 64 psig even though the waste will not be pressurized during transit. The steel framework surrounding the tank not only provides the means for handling and fastening the container but it provides a protective shield around the liquid bearing tank shell.

Shipment - SeaBurn will employ custom container chassis, i.e., tractor trailers. These chassis have a low center of gravity which enhances lateral stability and have standard twist lock securing devices, for container attachment. The chassis will exceed Federal Motor Vehicle Safety Standards set by the National Highway Traffic Safety Administration, as well as, the in-service safety requirements of DOT's Bureau of Motor Carrier Safety.

When shipped by rail, SeaBurn containers will use TTAX, TTCX or similar container-accomodating railcars. The containers will be moved only as "Container on Flat Car" and not as piggyback units. The Association of American Railroad strength requirements will be demonstrated by test and certified.

Marine Terminals - Upon arrival at the seaport, the container will be lifted off the chassis and placed aboard the SeaBurn vessel by container cranes. No blending, pumping or storing of wastes will occur in the port area. The terminal serves only as a short-term parking lot and will have safety surveillance around the clock. SeaBurn can operate from any port where container handling equipment can be made available.

Vessel - The designed SeaBurn vessel, conceptually approved by U.S. Coast Guard, is an ocean-going barge. It is an IMO Type I vessel and will be under U.S. Registry and will have a U.S. Crew. As mentioned earlier, the vessel accommodates 144 containers or roughly 750,000 gallons--significantly less than the incineration vessels of the bulk waste types. Piping between containers and incinerators will be connected while at sea. Wastes will be fed into the incinerators by prearranged sequence and according to a predetermined match-up between containers and incinerators. Where possible, tank cleaning will be done aboard the vessel. Contaminated cleaning solutions will be able to be disposed of immediately into the incinerators.

Incinerators - SeaBurn will use horizontally-mounted custom incinerators. The U.S. Environmental Protection Agency has conceptually approved this incinerator design, showing a predicable efficiency of 99.9999%. Seawater scrubbers quench the exhaust gases--lowering exit temperature from 2500°F to 300°F. Consequently, the thermal lift of the gases is reduced; that is, there will be no high elevation plume. The SeaBurn discharge rapidly enters the ocean behind the SeaBurn vessel. Monitoring and sampling procedures are aided by the horizontal position of the incinerators and by the lowered temperature of the exhaust thereby permitting existing and proven apparatus and procedures to be used.

Spill Control/Emergency Response - Each container can be removed quickly from a port area if necessary, since the containers will be retained on their chassis. Aboard ship each container constitutes a separate capsule. The container fastenings can allow for the container to float free of the vessel in the unlikely event of a sinking. Quite possibly the containers may be retrieved from reasonable depths--without discharging the waste contents into the ocean, simlar to the retrieval of the radioactive containers from the SS Mont Louis in the North Sea last year. The SeaBurn barge is a shallow draft vessel with all containers and equipment secured above the main deck. Therefore, in case of grounding or collision there are no waste storage tanks below deck to burst open and release their contents.

We are pleased to respond to the following issues and questions raised specifically by the Subcommittee on Environmental Pollution:

Stolt-Nielsen has provided international bulk chemical transport for over twenty-five years. SeaBurn was established in 1982 as a natural extension of this service. The skills, experience and commitment to excellence of Stolt-Nielsen is carried on in SeaBurn. On October 19, 1983 SeaBurn applied to EPA for an ocean incineration permit under the Marine Protection, Research and Sanctuaries Act (MPRSA) to burn hazardous wastes at all present or future designated burn sites. Naturally we need to know by what standards our performance will be judged, therefore, SeaBurn has called for and supported the promulgation of ocean incineration regulations. While we await the final adoption of these proposed regulations, SeaBurn has not undertaken the construction of a vessel, although SeaBurn is presently reviewing EPA's proposed ocean incineration regulations and will identify for the Subcommitte several areas of major concern:

1. Site Access - The EPA Office of Waste has expressed a policy of allowing only one ship per burn site. Such a policy would severely and unnecessarily restrict the economic viability of ocean incineration because it would require very expensive vessels to sit idle waiting for the burn site to be vacated by some other vessel, thereby driving up the costs of incinerating waste. If one incinerator vessel had an extremely low burn rate or if it had constant equipment breakdowns causing the incinerator burners continually to shut down, or if the vessel had a huge waste storage cargo capacity, a ship could monopolize the burn site.

   The one ship per burn site policy would also fail to recognize that use of the site must be influenced by:

   a. What incinerator technology is employed on a particular vessel.
   b. The capacity of a given burn site to buffer the effluents from incineration (e.g., ocean currents, depth of water, etc.).
   c. The safety of the vessels as indicated by the IMO classification of each vessel, the use of latest navigation equipment, amount of illumination on deck, etc.

2. Multiple Burnsites - Various State officials and public interest associations have complained that they objected to the use of their State as the primary artery for flow of the nation's toxic waste to service incinerator ships. SeaBurn suggests having EPA design multiple burnsites off each Coast so that the land leg of waste transport will be minimized. As this would avoid unduly overburdening any one port, the movement of waste might be shared proportionately by all ports on the Coasts.

3. Performance Monitoring - Through the examination of incinerator performance data and through the personal observations of incineration process by ship riders, EPA will have reliable information to assure themselves that the thermal destruction of waste using shipboard incinerators is complete and reliable. The analysis of such data and preparation and review of such reports must not delay the normal operations of the vessel in conducting the subsequent voyage(s) unless there is some strong suspicion and verifiable evidence that there has been a serious departure from environmental safeguards.

Also, the cost of surveillance and enforcement procedures should be borne by EPA. In this respect, it would be similar to other regulatory enforcement programs of Federal Agencies like: U.S. Coast Guard, Bureau of Motor Carrier Safety, Federal Aviation Administration, U.S. Customs Service, USDA Animal and Plant Health Inspection Services, etc.

4. Research Opportunities - The EPA Office of Water research strategy appears to favor the use of the old bulk tanker-type incinerator vessels having vertical incinerator stacks. Our SeaBurn design lends itself more particularly to an R&D program because of its ability to isolate containerized quantities for study and yet provide for variety of waste composition within different containers. Ours moreover is more cost effective since R&D studies can be combined with and conducted concurrently with commercial burns, thereby making the research investigation very economical. Despite considerable correspondence with EPA and participating in public meetings and private meetings relative to R&D, we have made little progress in generating an R&D program.

5. Consistency of Requirements - Certainly we subscribe to the establishment of financial responsibility for ocean incinerator operators. But it must be remembered that a U.S. Flag operator will be competing under the burden of two handicaps:

   1. Congress has--for reasons which we think should be re-examined--permitted a grandfather exemption to a couple of non-U.S. Flag vessels which enjoy the competitive advantage of having been built in foreign shipyards at one-third the cost of building in the U.S. shipyards and operated with crews whose salaries are one-half those of American seaman.

   2. Lack of uniform liability insurance between land-based incinerators and oceangoing incinerators places the ship operator at a decided disadvantage. One can quickly respond by saying that the risks at sea are greater, but we maintain that they are not. An IMO Class I vessel with containerized cargo stowed only above deck is the lowest risk to the environment that can be offered with today's state-of-the-art.

We urge the Committee to provide consistent requirements between CERCLA, MPRSA and RCRA particularly with respect to:

1. Review and approval of contingency plans.
2. Site monitoring and assessment.
3. Compliance enforcement procedures and nature of penalties.
4. Insurance requirements and liabilities.
5. Data gathering, retention and privileged access.
6. Consolidation of trial burn and operating permit process.

We appreciate the opportunity to express these views to you and will be glad to answer any questions.

SeaBurn Inc.

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The Honorable Lloyd Bentsen
United States Senate
Committee on Environment and
Public Works
Washington, D.C. 20510

July 9, 1985

Dear Senator Bentsen:

Attached are our comments to the questions raised in your letter to me of June 24th concerning ocean incineration.

Should these raise any new matters, we will gladly respond further.

Very truly yours,

Vincent G. Grey /dmc

Vincent G. Grey
President

VGG:dmc

Attachments

1. We believe that all incinerator vessel operators would wish to minimize the airborn plume because of the complaints expressed by the Public and the organized environmental groups about uncontrolled drifting of toxic exhaust gases that emanated from incinerator stacks during previous burns in the Gulf of Mexico. With the horizontal position of our incinerators, we are able to install seawater scrubbers off of the incinerator outlet, presenting a water curtain through which the exhaust gases must pass. Four things happen:

   a. The temperature of the gases drop from 2600 F to about 300 F. This lower temperature permits the use of monitoring instruments of proven accuracy and satisfactory durability.

   b. The thermal lift of the plume is eliminated, consequently the wind will not carry the effluents over undesired land masses.

   c. The kinetic energy and velocity of the exiting gases is dissipated by the infusion of the cold seawater and the plume descends into the sea within about 300 yards.

   d. The rapid saturation of the exhaust gases increases the density of the gas and when coupled with the fact that the highly acidic gas has a strong affinity for water, the neutralizing process of the sea is immediately achieved.

We are certain that other incinerator vessel operators would use seawater scrubbers if they could. But, their vertical incinerator stacks makes if difficult, if not impossible, to install and operate.

2. Like all other containership operations in American ports, containers are preferably delivered to marine terminal shortly before placing aboard the vessel in order to minimize the period of storage. We would be able to follow the same practice. However, we have two advantages over containerships engaged in foreign commerce:

   a. Our vessel leaves and returns to the same port and, during its absence when it is at sea burning, we are in constant communication. Hence we will know precisely when it will return to port and can coordinate the delivery of the full tank containers with the ship's arrival.

   b. The entire overland journey of the tank containers enroute to the port would be two to three days from any location in the Continental U.S. Thus the lead time to assure proper scheduling is not extensive.

In any event, we expect the storage period in our terminal to average one to two days. Also, we are mindful that under RCRA, we may not hold the filled containers at the terminal for longer than ten days without obtaining a storage permit.

3. As you know from our testimony, we are awaiting issuance of the final rules for Ocean Incineration before we proceed with construction of our purpose-designed vessel. Realistically that would take 18 months after release of the contract. However, we also have alternative designs that would permit operations to commence in 9 months. A decision on which course to adopt has not yet been made. As far as the containers are concerned, we already have 1,000 of the large intermodal tank containers in service right now.

4. Regarding our incinerators, we have declared our intention to use the John Zink Company as our manufacturer, the foremost American manufacturer in the field. It was their unit installed for General Electric in Pittsfield (Massachusetts), that provided EPA with the basic data to call for ocean incineration vessel performance levels of 99.999% for the combustion process.

   Unlike the older rotary cup designs used on Apollo I and II, ours is an in-line, axial flow, steam atomized, two-stage combustion chamber employing a potential high turbulence firebox design for more positive burning.

   As regards optimal long term useage, the burner based and atomizing tip are routinely checked and serviced. The refractory in the oxidizer receives periodic maintenance along with all other equipment. Based on the program we have developed for inspection, maintenance and repair, the incinerators are expected to perform properly on the full life of the vessel.

5. These questions are answered in answers one and four above.

6. Since we are already operating some 42 major chemcial parcel tankers in worldwide ocean transport today, all of which serve U.S. ports regularly, Stolt-Nielsen has in place now, a USCG approved contingency plan. In fact, it was our contingency plan that the Coast Guard has used as a model for all other chemical ship operators to use to prepare theirs.

   The SeaBurn vessel would incorporate, to the extent possible, the same protective methods and emergency procedures as we employ on our other vessels. However, there are several unique factors which we have introduced because of SeaBurn's tank container use:

   a. The containers in port will be retained on their chassis (i.e. truck trailers) so that in the event of fire or flood or other emergency, they can be immediately evacuated to a safe location by simply hooking up a tractor and hauling them away.

   b. The vessel is designed to meet the IMO Type I chemical tanker construction requirements, exceeding the Type II standard used by the other ocean incineration vessels.

   c. No waste is transferred to or from the tank containers while in port.

   d. There is a spill containment system designed into the vessel so that, if a leak occurs, the waste is captured and piped into the incinerators directly.

   e. The containers, being capsules themselves, provide additional protection in the event of collision or sinking. They are all stowed above the main deck and not likely to be affected by the stranding. (Besides the draft of the vessel is only 12 1/2 feet and less likely to go aground.)

   f. If the SeaBurn vessel did sink (even though its stability and flotation requirements are in compliance with the stringent Type I Code) the containers could be salvaged if the vessel went down in port or on the Continental Shelf. This would be without the release of the waste into the sea.

7. We have been in the marine transportation industry for 26 years, and we are proud of our reputation in industry and amoung the environmental groups. It is our intention to carry on in the same manner as we enter the waste disposal field using our incinerator vessel. Because we are not conversant with the history and practices of other companies in waste management, we cannot comment on the "poor record of compliance" that you speak of.

8. Answered under six above.

9. It would be hard to understand under what circumstances further delay of ocean incineration could be justified.

    a. The subject has been studied more than any other technology.

    b. To do nothing is to perpetuate land-based incineration which is less controlled.

    c. It answers the NIMBY syndrome question.

    d. It is a practical approach to reducing the growing backlog of stored wastes.

    e. Alternative solutions to safe disposal are disappearing and will soon be phased out completely. Several potential alternatives are applicable only to laboratory disposal quantities or atmosphere and will never have commercial viability. Even if they eventually become acceptable and practical, the waste disposal process can still take place on a vessel at sea as a preferable site.

Questions Submitted By Senator Bentsen

1. Your incinerators have scrubbers while other companies do not provide them. Please describe what function the scrubbers perform and why you decided to use them even though others did not.

2. What is the maximum time that filled containers will be stored at port prior to loading?

3. By what date will your company be prepared to begin commercial operation?

4. You stated that your incinerator differs from vertical incinerators in that they are horizontally mounted, custom-built incinerators.

--How do they function differently?

--Will you incinerators burn at optimal efficiency over the long term?

--How will this be assured?

--What is the life expectancy of these incinerators?

5. SeaBurn, Inc., is offering a different type of incinerator than that used on other incinerator vessels.

--What, in your view are the comparative advantages and disadvantages of the two systems?

--Why has SeaBurn elected to equip their incinerators with scrubbers, while other companies have not?

--Is there a difference in the longevity and burn efficiency of two systems?

6. What planning has your company taken to react to a worst-case scenario in the event of a major accident and spill at port, en route to the site, and at the burn site?

--What cleanup methods exist?

--What tests of cleanup methods have you conducted?

--Are there companies offering emergency cleanup service?

--What effect will climatic variables have on your ability to mitigate the extent of damage and effect cleanup procedures?

7. If ocean incineration permitting were unavailable for several years or EPA determined not to issue permits at all, what would be the consequences for your company?

--Would the company look for markets outside the U.S.?

--Is there a possibility of default on the loans?

--What are the provisions in the loan guarantee in this event?

8. What do you recommend as desirable liabiliity insurance requirements for cleanup and repair? What kind of protection do you think should be provided for third parties whose livelihood is damaged if an accident occurs, even though they are not physically damaged?

OCEAN INCINERATION

WEDNESDAY, JULY 17, 1985

U.S. Senate,
Committee on Environment and Public Works,
Subcommittee on Environmental Pollution,
Washington, DC.

The subcommittee met at 10:12 a.m., in room SD-406, Dirksen Senate Office Building, Hon. John Chafee (chairman of the subcommittee) presiding.

Present: Senators Chafee, Humphrey, Bentsen, and Lautenberg.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator **Chafee**. Good morning. I apologize for being late and holding my colleagues up.

This is the second of 2 days of oversight hearings on the ocean incineration policy developed by EPA. Last month we heard from a variety of State officials, public interest groups, and others on the merit of ocean incineration. Today we have invited a distinguished panel of Federal Government witnesses who have been involved in developing this policy.

The use of the oceans to dispose of waste has become highly controversial and emotional. As we tighten up requirements for disposal of wastes on land, the oceans are, to some, becoming an increasingly attractive place to dispose of waste. Incineration is one proposed disposal method. These hearings are aimed at determining whether the proposed EPA policy is environmentally sound.

In addition to the five Government witnesses this morning, Senator Biden also will be with us. He has a longstanding interest in protecting the oceans. We look forward to hearing his testimony.

Also, the distinguished ranking member of the full committee, Senator Bentsen, has had a deep interest in this matter as it affects his State. He was very active in the first hearing that we had on the subject. I want others to know that we have scheduled these hearings as a result of Senator Bentsen's strong interest and leadership on this issue.

Before we begin, I would like to submit, at the appropriate place in the hearing record, testimony on behalf of Gov. George C. Wallace of Alabama. Governor Wallace was unable to be here. He has strong concerns over the ocean incineration policy since the ships proposed to burn these hazardous wastes could possibly operate out of Mobile, AL. [See p. 416.]

I would like to welcome all the witnesses here this morning. I look forward to opening statements now on behalf of any of the Members. Senator Bentsen.

OPENING STATEMENT OF HON. LLOYD BENTSEN, U.S. SENATOR FROM THE STATE OF TEXAS

Senator BENTSEN. Thank you very much, Mr. Chairman. I am deeply appreciative of you calling these meetings at my request and showing your great concern.

I want to welcome the witnesses and other interested parties to this second day of hearings on ocean incineration.

Ocean incineration of toxic wastes on the scale proposed by EPA is understandably of great concern to all of us—and especially to people who live along the gulf coast, and whose livelihood depends on the bounty of the waters of the gulf.

Our files are full of questions and concerns over the ramifications of accidents at sea or on land, the effects of burning on the environment, and the possibilities of danger to residents of the gulf coast. I must say frankly that I do not believe these concerns have been properly addressed, and there can be no successful program until there is public confidence in this program. These questions must be answered, and I intend to see that they are.

For our purposes here today, there appear to be several specific issues that should be addressed by the Government witnesses. A great diversity of views was presented by State officials, environmental groups and industry witnesses on the first day, and I think any fair summary would include these questions:

First. Need—Is there a need for ocean incineration, given the current land-based incinerator capacity, the projected increases in capacity, and emerging alternative technologies? If there is a need, what are the consequences of not going ahead with ocean incineration?

The United States is a signatore to the London Dumping Convention, which requires that all practical and feasible alternatives be considered before permitting ocean-based disposal of hazardous wastes. I want to know if the Government thinks this has been done.

Second. Some very strong arguments have been made that the Government's plans are based on incomplete research. Critics point out that the Science Advisory Board and EPA's Office of Policy, Planning and Evaluation published their research documents after the proposed regulations had been published. First day witnesses testified that more information is needed regarding the potential impacts of stack emissions during normal incineration conditions. There appears to be uncertainty regarding the effect of emissions on the ocean micro layer under even the best operating conditions.

There is unanimity that in a worst case scenario involving a spill of PCB contaminated material, the impact would be disastrous. But there is little information on how long this material would remain in the ecosystem, or how far it might spread under varying climatic conditions.

The Science Advisory Board report cites 12 areas where information is lacking and concludes that the EPA has the responsibility to address and reduce the levels of uncertainty. Proceeding with technology that carries significant levels of uncertainty will not produce a necessary level of public trust. I would like to determine today what is known and what is not known—and I hope to hear what must be known before any decision on ocean incineration is made.

Third. EPA's proposed regulations establish a set of site selection criteria to use in picking ocean incineration sites. Despite this fact the proposed regulations also seem to say that the gulf coast site will be grandfathered. Public officials and residents of Texas are particularly upset that the gulf site may not be subjected to the new site selection rules. If there is going to be a certain set of rules by which to choose an incineration site, then those rules ought to be applied to all sites.

Fourth. Liability Issues—One of the most significant objections among a number of legitimate concerns is that the proposed liability protection requirements are inadequate. The EPA has indicated its hands are tied on the whole issue of third party recovery rights. I submit that these issues must be addressed—if not in regulations, then in legislation. It is just unthinkable to permit ocean incineration to take place without first having an explicit, rational and comprehensive liability protection arrangement in place.

Fifth. Coordination with other agencies—The EPA should not stand unassisted in its efforts to deal with the subject of ocean incineration. The U.S. Coast Guard and the National Oceanic and Atmospheric Administration have statutory responsibilities that make them participants in this important issue. While the proposed EPA regulations refer to some of these responsibilities, it does not apear that the three agencies developed a coordinated approach to analysis and regulation. Indeed, it is not certain what stage of preparation the Coast Guard and NOAA have reached in carrying out their responsibilities. I question the propriety of issuing proposed regulations that do not take these factors into account. I hope the testimony will clear up this and other issues I have referred to.

The witnesses and their respective organizations have a heavy burden to carry; ocean incineration poses difficult questions. Given the seriousness of the issue we are examining, these questions must be addressed and answers must be found. Otherwise we may be taking risks that we simply have no business taking.

Thank you, Mr. Chairman.

Senator CHAFEE. Thank you, Senator Bentsen.

Senator Lautenberg.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Thank you, Mr. Chairman.

Hazardous waste disposal is among the most important environmental challenges of the next decade. We have to develop new methods and technologies to address hazardous waste disposal needs. The reduction of hazardous waste at its source and an increase in recycling and recovery of such wastes will be essential.

Some waste, however, no matter what we do, will remain to be disposed of. It is within this context that incineration technologies ought to be viewed.

Incineration under properly controlled conditions offers an important option for the disposing of hazardous waste. Advocates of ocean incineration believe that this technology has a role to play in the safe disposal of toxic wastes.

There are, however, a number of serious concerns which have been raised about ocean incineration and EPA's handling of ocean incineration regulation. These concerns have to be addressed satisfactorily before commercial incineration of liquid organic waste can be allowed to proceed. That is why these hearings are so important. They provide an opportunity for the committee to further investigate the issues associated with ocean incineration and to hear the views of those with contrasting views on the practices of this technology.

In my mind, several issues remain open about ocean incineration. What are the effects? In April, EPA's Science Advisory Board issued a report on ocean incineration, concluding that there are areas of uncertainty about the toxicity of emissions and effects this technology could have on the public health and the environment.

I am particularly concerned about these findings because the Atlantic incineration site is 140 miles off Cape May, NJ, and New Jersey ports may be used as a collection point for transport to sea.

On the question is there a need for ocean incineration, certainly when one comes from a State like mine, the most densely populated in the Union, it is very hard to find land-based alternatives. So we have to examine it. But, thus far there are a lot of questions that remain.

The New Jersey Hazardous Waste Facility Siting Commission recently issued a report on hazardous waste facilities which are needed in New Jersey. The Commission concluded that all liquid organic hazardous wastes should be burned in land incinerators with hazardous solids and sludges. This report is going to be subject to extensive review in New Jersey, but it raises the question with respect to ocean incineration.

In addition, EPA's proposed regulations appear to narrow the scope of consideration EPA will give to the need for ocean incineration.

Another question is what are the hazards of using urban port transfer points? I am concerned about hazardous wastes being brought into an urban area and the potential effect that a spill might have.

In addition, we need to examine whether legislation is needed to clarify liability resulting from the spill.

Mr. Chairman, the ocean incineration program has gotten off to a bumpy start, leaving a lack of confidence for some in EPA. The problem was heightend, in my view, when EPA proceeded with a public hearing in New Jersey in April on its proposed ocean incineration regulations without giving the public adequate opportunity to review two Government reports on ocean incineration.

I intend to explore these issues, Mr. Chairman, during today's hearing, and I look forward to working with the committee on these and other issues concerning the safe disposal of hazardous waste material Thank you.

Senator **Chafee**. Thank you very much, Senator Lautenberg. I know you have been deeply interested in this matter and have been a faithful attendee of these hearings.

Senator Humphrey, any statement?

Senator **Humphrey**. No, Mr. Chairman.

Senatory **Chafee**. I will, at this point in the record, insert a statement from Senator Mitchell.

[The statement referred to follows:]

Opening Statement of Hon. George J. Mitchell, U.S. Senator From the State of Maine

Mr. Chairman: I would like to welcome the witnesses for today's hearing on the important subject of incineration-at-sea of hazardous wastes.

At our hearing on this issue last month, we heard the views of representatives of environmental and industry groups. These witnesses spoke to both the technical aspects of at sea incineration and the broader policy questions raised by this practice.

I hope that today's witnesses, representing the Administration, will help us clarify some of the technical issues discussed earlier and focus some of the broader policy issues posed by the concept of at sea incineration. I am especially interested in Administration views on the best ways of assessing the relative risks posed by land based incineration and at sea incineration.

Thank you, Mr. Chairman.

Senator **Chafee**. All right. Senator Biden is going to join us shortly. We will proceed. We have five witnesses. Do you have testimony also, Mr. Ravan?

Mr. **Ravan**. No, sir. I will back up Mr. Longest.

Senator **Chafee**. Each of you will have to limit your testimony to 5 minutes. Your full statement will be inserted in the record, so don't worry about that.

We will start with Mr. Longest, who is the Acting Assistant Administrator of EPA for Water. We welcome you here again, Henry.

STATEMENT OF HENRY LONGEST, ACTING ASSISTANT ADMINISTRATOR FOR WATER, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY JACK RAVAN, REGIONAL ADMINISTRATOR, REGION IV, EPA

Mr. **Longest**. Thank you, Mr. Chairman.

We have with us today Mr. Ravan, who was most familiar with these regulations in their development before he became EPA's Regional Administrator in Atlanta.

Senator **Chafee**. Excuse me. I understand in our letter we said you would have 10 minutes. Well, make it five. If you go a little bit over, we won't object too much. But we want to give the Senators plenty of time to ask questions. If this curtails you too much, we will wrestle with that.

Go ahead.

Mr. **Longest**. I see we have no caution light. It goes from green to red, right?

Senator **Chafee**. We have the clock on you.

Mr. **Longest**. Ocean incineration is a controversial issue with substantial public interest. We feel strongly that it needs to have good public policy, and in order to do that we need a lot of public input policies we are developing.

The hazardous waste problem we face deals with volumes of dangerous byproducts generated in our industrial society. Based on an 1981 survey done by EPA, more than 1 metric ton of hazardous waste is generated for every citizen in the United States each year.

So we have seen the effects of past improper disposal practices. Last year Congress amended the Resource Conservation and Recovery Act to restrict land disposal of certain liquid hazardous waste. The amendments established a schedule to regulate wastes in landfills and impoundments and encouraged a policy of reduction, recycling and reuse of waste materials.

But the fact remains that even with strict controls on land disposal methods and even with the extremely active effort to recycle wastes, we still generate hazardous waste materials.

We further believe the interest in incineration is likely to increase because of the projected market for hazardous waste incineration.

In our March 1985 Incineration Study we assessed the current market projection for hazardous waste incineration. We found that although commercial and on-site facilities on land are adequate to handle existing demand, except for PCBs where commercial facilities are filled to capacity, future demand will significantly exceed this capacity as other disposal alternatives are increasingly restricted.

One option for destruction of liquid hazardous waste falls under the Marine Protection, Research and Sanctuaries Act. EPA is currently involved in a deliberative and open process to develop specific criteria to regulate ocean incineration. This is not a technology that we have hurried to embrace but, rather, one with a steady history of development.

While EPA was developing the proposed regulation, the agency was also involved in three other efforts: the Office of Policy, Planning, and Evaluation's Incineration Study; the Science Advisory Board's Report; and the Office of Water's Incineration at Sea Research strategy.

We have given the public substantial opportunity to review and comment on our proposed regulations. We accepted written and verbal suggestions in our 120-day comment period which closed on June 28, 1985. EPA held five public hearings, conducted numerous informational briefings around the country, and established a bilingual communication service in Brownville, Texas to respond to citizens' requests for information.

Major issues that have been raised in the public comments, and the key concern, is risk.

Although our analyses show that the possibility of any spill is small, and of a major spill smaller still, many commentors were highly sensitive to the risk issue. They believe that land-based incineration is safer than ocean incineration because of possible transportation-related spills involved in incineration at sea. Some also believe the consequence of a spill of highly toxic waste negates any reduced risk of incinerating wastes away from population centers.

It is difficult to weigh risk on this issue because those who oppose ocean incineration can see no direct benefits from this industry, such as jobs, new industries, or better port facilities. The interest seems to be in no risk rather than a low risk option.

EPA must balance the risks of incineration of liquid waste at sea with the risk of storing or incinerating all hazardous waste on land.

The second issue is the needs assessment. We received many comments on the question of whether EPA has demonstrated the need for ocean incineration. The agency's position is that the incineration study will form the basis of a generic analysis of need for ocean incineration. The public requested an opportunity to review and comment on the analysis and criteria that the agency will use in determining the need for ocean incineration.

The scope of the regulation. Some commentors did not like the fact that the total responsibility for ocean incineration was splintered among agencies and recommended that one agency should govern all incineration-related activities.

EPA does not believe the intent of the Marine Protection Research and Sanctuaries Act was to require EPA to exercise specific control over activities other than the incineration process and the designation and management of incineration sites.

The Department of Transportation regulates the land transportation of hazardous waste. The Coast Guard, under the Department of Transportation, specifies design, construction equipment and operational requirements of vessels.

We understand that Federal coordination is essential for the process to work, and we intend to spend a great deal of effort on the coordination among agencies. Local agencies and some States also have a role in the decision process on the siting of port facilities.

Another issue is the financial responsibility and liability issue. While the MPRSA is silent on its financial responsibility and mandatory cleanup requirements, the Act grants broad powers to the agency. We have taken the position that the MPRSA authorizes EPA to impose a cleanup requirement and that reasonable financial responsibility amounts can be required to assure such cleanup.

The Agency requested public comment on a level of insurance between $50 million and $500 million as a means of demonstrating that a company would have the financial resources to take cleanup and mitigation measures. It also sought comment on whether there are other methods besides insurance for demonstrating financial responsibility.

In the permits area, many commentors objected to changes in permit processing procedures and permit terms. In proposing our regulations we eliminated the hearing officer's report and adjudicatory hearings to make the regulations consistent with the agency's other permit procedures.

In terms of the length of an ocean incineration permit, commentors indicated a 5-year permit term was acceptable, but most recommended either a 3-year permit term with the yearly renewal of permits or a 1-year permit.

Another area is regarding the oversight of incineration activities. Some commentors questioned whether EPA would have sufficient resources to carry out the oversight activities proposed in the regulation. The proposed rule provides oversight of the permittee's activities, including detailed permit applications, EPA shipriders on each voyage, trial burns, waste analyses, and monitoring data reports prior to each voyage and environmental monitoring of incineration sites.

There are some future activities that we will be responsible for, particularly in the regulatory process. The regulation comment period is now closed, and during the next few months we will be evaluating approximately 4,500 comments received from over 900 cards, letters, and petitions. It may be necessary to reopen the rule for public comment on issues raised during the comment period.

Our research strategy deals with three areas. I will just mention them and not go into any details. First, the verification of the methods for sampling incinerator emissions. Second, to include test burns and collect data and emission samples. The third area is long-term studies such as toxicity testing of sampling and the impact on the ocean environment.

Briefly touching on the incineration sites, most of you are aware that we do have a designated site in the Gulf of Mexico, approximately 200 miles south of the Louisiana-Texas border. We proposed a second site, known as the North Atlantic site, which in nautical miles is 140 miles east of the Delaware Bay. We are in the early stages of a multiyear effort to locate a site off the Pacific coast.

EPA asked for public comment on the current criteria, EPA make two changes in the informational requirements for designating sites. First is the establishment of carrying capacity of the site, and the second is required monitoring within the site.

In conclusion, Mr. Chairman, we have gone to great lengths to open the ocean incineration activity to all concerned parties. Because of their comments, our regulatory process continues to improve. We may not have solved the problem of hazardous waste, but we have initiated vital dialogue that 1 day will lead us to solutions.

Thank you for this opportunity. Mr. Ravan and I are here to respond to any questions.

Senator CHAFEE. Thank you very much, Mr. Longest. What we will do is take the statements of each of the witnesses and then proceed with the questions.

Dr. Yosie.

STATEMENT OF TERRY YOSIE, DIRECTOR, SCIENCE ADVISORY BOARD, ENVIRONMENTAL PROTECTION AGENCY

Dr. YOSIE. Good morning, Mr. Chairman and members of the subcommittee.

Thank you for the opportunity to discuss the conclusions and recommendations of the EPA Science Advisory Board's review of a number of technical issues involving the incineration of hazardous wastes at sea and on land.

As you know, the Science Advisory Board is an independent organization of scientists and engineers established by the Congress to advise EPA on scientific and technical issues.

During fiscal year 1985, the Board is conducting over 50 scientific reviews throughout EPA in an effort to identify areas of needed scientific information and to review the adequacy of the Agency's technical analyses used as a basis for regulatory decisions.

One of the Board's standing committees, the Environmental Effects, Transport and Fate Committee, chaired by Dr. Rolf Hartung of the University of Michigan, compiled and evaluated information on the public health and environmental impacts associated with the incineration of liquid hazardous wastes.

The purpose of this review, as originally requested by former EPA Administrator William Ruckelshaus, was to evaluate the overall adequacy of existing scientific data as a basis for future decisionmaking. The Committee was specifically asked to recommend areas for improving those data.

The Science Advisory Board report has been the subject of much discussion in the media, at EPA hearings on the proposed at sea incineration regulations, within EPA, among the general public and now within the Congress.

Having recently participated in a number of EPA's public hearings, I know the difficulty of presenting the views of a scientific committee to a nontechnical audience. Given this situation, I believe there is a need to keep two important points in mind when discussing the Science Advisory Board's review.

These include: The Board's report is strictly advisory and is not binding upon EPA; and the Board's report is not a review of EPA's proposed regulations to control hazardous waste burnings at sea. Neither does the report contain any recommendations as to where incineration ought to take place. The reasons for these omissions are conscious reasons—they involve the balancing of many policy related factors that were not within the charge of the Committee.

As the review Committee evaluated the data it had collected and wrote its report, it adopted a number of key observations or assumptions. Among the significant assumptions were the following.

Incineration is a valuable means for disposing of hazardous chemicals, preferable in many respects to the storage of chemicals in landfills. EPA has made progress in answering a number of technical questions about incineration and in developing an appropriate regulatory strategy. One significant point to remember, however, is that the Science Advisory Board was asked to address the shortcomings and technical needs of this program, and its comments should be considered in the light of what is in fact a valuable technology.

The second assumption is that the Board's comments, both positive and negative, should be interpreted by the Agency and the public as a desire to strengthen and move forward with already existing incineration programs rather than to discontinue what is already in place. One can argue whether the SAB report constitutes a green light or a blinking yellow light or a red light toward incineration. Members of the review committee expressed differing views on this issue, but the majority believe that EPA should move forward with the development of this technology, while observing the appropriate safeguards and by continuing to carry out the needed research.

The third assumption is that the state of scientific knowledge for many of the issues reviewed by the Science Advisory Board is such that definitive answers are not available at this time. Most of the recommendations in its report are directed at identifying what additional research should be carried out through the incineration at sea research strategy as well as EPA's ongoing research program. The committee concluded, however, that the research gaps identified are not of such a magnitude that should cause the Agency to forego development of this technology.

The fourth assumption is that the committee believes that many of its conclusions and recommendations are also applicable to other combustion processes such as those which occur in fossil fuel powerplants, internal combustion engines and home heating units. These would include gaseous and particulate emissions as well as emissions of chemical mixtures. A related point is that the environmental loadings from hazardous waste incinerators are relatively small in relation to these other combustion sources.

From these assumptions the Science Advisory Board formulated a number of specific technical conclusions and recommendations. Some of the more important ones include:

First, from evaluating the thousands of pages of documentation received and the testimony of dozens of scientists and engineers, the review committee concluded that the operation of liquid hazardous waste incinerators, to date, has not produced adverse ecological or human health effects. Considerable uncertainty surrounds the data that lead to this conclusion, however. For example, the monitoring programs used during test burns conducted to date were limited and they raise, as well as answer, a host of technical questions. The committee recommends a number of steps the agency ought to undertake to reduce these and other uncertainties.

Second, EPA ought to initiate a fuller assessment of fugitive emissions from all phases of the waste management and disposal process, from onsite generation and storage of wastes to their ultimate disposal and/or destruction.

Third, the toxicities of emissions and effluents from land-based and ocean-based incinerators are largely unknown. EPA should attempt to characterize incinerator emissions and effluents so that the identity and quantity of chemicals released into the environment can be more precisely estimated. This can be achieved by testing the toxicities of representative incinerator emissions and effluents, at a minimum, on sensitive life stages of representative aquatic and terrestrial organisms and plants of major ecological importance.

Another conclusion is the agency should attempt to determine incinerator emissions under all operating conditions.

Finally, environmental transport and fate processes should be evaluated. Examples include the role of the ocean microlayer or sea slick in transporting and concentrating emitted chemicals, and the role of the food chain. An understanding of these processes is important for assessing exposure to various organisms.

What are we to make of these findings? First, how does the SAB report compare to the incineration study issued by EPA's Office of Policy, Planning and Evaluation? While each of these reports was prepared for different purposes and addresses somewhat differing questions, they ultimately complement each other in terms of the fundamental conclusion reached on the viability of incineration technologies to dispose of hazardous wastes.

Second, whether you believe the research glass is half full or half empty, it is clear that EPA needs to make policy and permitting decisions now, in part because of the deadlines imposed by the 1984 amendments to the Resource Conservation and Recovery Act. The Science Advisory Board acknowledges this fundamental reality. I might note another committee of the Board is currently assisting EPA in implementing the RCRA amendments by reviewing the methodologies that will be used to determine which hazardous wastes should be barred from landfills.

A number of people have asked me whether some of the criticisms in the SAB report won't be used by opponents of incineration to block further adoption of this technology. My response is that many of these issues had already arisen and were likely to continue to arise even without a Science Advisory Board review.

What has made the Board's report so prominent is the timing of its release in the middle of the public comment period, the stature of the scientists and engineers serving on the review committee, and the fact that it was the Administrator's own official advisory body that rendered these opinions.

The Science Advisory Board is trying to encourage EPA to develop a longer run view of how it can more safely utilize and defend its use of incineration technologies. It also believes that by asking the difficult questions now, the answers will more readily be obtained and the Agency's scientific credibility will improve.

In summary, if asked for just the facts about the Science Advisory Board's report, the facts are these: Incineration of hazardous wastes is preferable to other kinds of waste storage and disposal. Some significant questions remain about the environmental performance of incinerators insofar as they relate to the exposure of humans and other forms of life to emissions.

I believe that EPA's research strategy provides a sound basis for addressing the concerns raised by the Science Advisory Board. As EPA initiates some of the needed research, we at the Science Advisory Board have worked with and will continue to work with the agency in the implementation of the incineration at sea research strategy.

I expect, therefore, that the Board will perform a continuing role in addressing the scientific concerns that it and the public have raised, and I anticipate that it will issue periodic reports on the degree of progress EPA is achieving in implementing its research strategy.

Thank you very much.

Senator **Chafee**. Thank you very much, Dr. Yosie.

Commodore Kime, we welcome you here and look forward to your testimony.

STATEMENT OF COMMODORE JOHN W. KIME, CHIEF, OFFICE OF MERCHANT MARINE SAFETY, U.S. COAST GUARD

Commodore **Kime**. Thank you, Mr. Chairman, and members of the committee. I am Commodore William Kime, Chief of the Office of Merchant Marine Safety, U.S. Coast Guard Headquarters and immediate past chief of the Office of Marine Environment and Systems. I am very pleased to appear before you today to discuss the

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OCEAN INCINERATION

HEARINGS

BEFORE THE

SUBCOMMITTEE ON
ENVIRONMENTAL POLLUTION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

NINETY-NINTH CONGRESS

FIRST SESSION

JUNE 19 AND JULY 17, 1985

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OCEAN INCINERATION

WEDNESDAY, JUNE 19, 1985

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION,
Washington, DC.

The subcommittee met at 10 a.m., in room SD-406, Dirksen Senate Office Building, Hon. John Chafee (chairman of the subcommittee) presiding.

Present: Senators Chafee, Bentsen, and Lautenberg.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator CHAFEE. Good morning, ladies and gentlemen. This is the first of two oversight hearings on the subject of ocean incineration.

Today we are going to hear from Governor White of Texas and other State officials as well as environmental and industry groups on the pros and cons of ocean incineration.

Next month we will have EPA and other Federal agencies up to testify on the proposed ocean incineration regulations.

Since 1983, when EPA first proposed to issue operational permits for ocean incineration, much controversy has surrounded this method of hazardous waste treatment. During these hearings we hope to receive answers to a number of critical questions which have been raised over the past 2 years. For example, is ocean incineration needed? Second, has adequate research been done on the effects of this technology on marine life? Third, are appropriate steps being taken to prevent a catastrophic spill? Fourth, is it as safe or safer than incineration on land?

I note that the distinguished ranking member of the full committee, Senator Bentsen, is here. This is a subject in which he has had a long and deep interest. I am pleased that we are able to schedule these hearings at your request, Senator, because I know this is a matter that has concerned you, and you have raised it frequently in committee meetings. As a result of your concern, we are holding these hearings today.

We would be glad to hear from you if you have an opening statement.

OPENING STATEMENT OF HON. LLOYD BENTSEN, U.S. SENATOR FROM THE STATE OF TEXAS

Senator BENTSEN. Thank you very much, Mr. Chairman. Let me say I am most appreciative of the efforts of you and the chairman of the full committee, Senator Stafford, in scheduling these hearings at my request. You have worked hard to protect the environment. I know of your deep interest in this. I am most appreciative.

Governor White, won't you sit down and make yourself comfortable. We will be hearing from you in just a few minutes.

Supporters of ocean burning say it is the best way to destroy toxic wastes. But the big question is whether toxic wastes are all that it would destroy.

No one denies the potential benefits of this new method of disposing of these wastes, but a great many questions are raised about its potential for damaging the environment; for damaging the fishing and other industries that are vital to the economy of the gulf coast. But of most concern is the possibility of damaging the health and the well-being of people in the affected area.

The Gulf of Mexico is currently the only site designated for ocean incineration. Under the Environmental Protection Agency's proposed regulations, incineration permits could have been issued within a year. Therefore, these hearings may well provide the best opportunity to examine the issues and the questions that have been raised in regard to the gulf and other possible future burn sites prior to any decisions that are made.

The Texas Gulf is vital to the well-being of a lot of people. Contamination or even the threat of contamination could be very harmful to the fishing, shrimping, tourism, real estate, other interests, and the health of the people in that area. Our uppermost concern must be the health and safety of our citizens.

I will say at the outset of this hearing that an activity that unreasonably threatens health and the welfare of our people or threatens the damage to gulf coast resources is clearly not acceptable.

I am mindful of the fact that American industry creates jobs and products to enhance the lives of all of us. It is a major factor in our quality of life. But we also know that a variety of wastes are produced as a byproduct of those benefits.

This country has learned at great, and sometimes tragic, cost that some of these wastes are long-lived wastes. They are deadly if not handled with great care.

Attempts to deal with the more threatening chemicals by storing them in the ground has not always been acceptable. Storage of those chemicals does not solve the problem; it just prolongs the time of solution. Where improper storage occurs, there is ultimate damage to the environment in yet another potential life-threatening situation.

An alternative for disposing of PCB's and other dangerous wastes has to be found. Ocean incineration has been advocated in some corners as one of those alternatives.

I have consistently expressed my concern over this method of disposal, as I have monitored EPA efforts to identify ocean incineration sites and to formulate regulations for permits.

By request, EPA provided public access to this process by holding a number of hearings, two of them in the State of Texas, in Brownsville. In May 1984, in response to my concern and that of others, the Agency postponed burn permits which had been scheduled to be issued and to be in effect for up to 3 years. Since that time, in an effort to address the problems identified by myself and others, the EPA has designed a research strategy which is intended to assess potential impacts of ocean incineration.

To establish regulations that would govern the issuance of permits, EPA has proposed a set of regulations specifying where, how and under what circumstances ocean incineration will be permitted. To assess the needs for ocean incineration, the EPA Office of Policy, Planning, and Evaluation has conducted an assessment of ocean incineration as a treatment method for liquid hazardous wastes. The Science Advisory Board, an independent research office, has conducted a study and published findings regarding the human health and environmental risks of ocean incineration.

These documents have been available for a few months. They have been analyzed by a number of organizations and individuals, both supportive of, and opposed to, ocean incineration.

The important issues involved are these: Do we need ocean burning? Has enough research been done? Are the proposed regulations adequate for the siting and conducting of ocean incineration? Those are the questions that we are trying to resolve here.

We are very fortunate this morning to have the distinguished Governor of the State of Texas, Gov. Mark White, Mr. Chairman, who has had a deep and long concern in this. You will note if you follow his testimony the amount of research that he has done and the amount of involvement that has taken place by himself and his administration in this regard. I am very pleased to see him here this morning. I welcome him here, as I am sure you do, Mr. Chairman.

Senator **Chafee**. Thank you, Senator Bentsen.

Indeed, Governor, we welcome you here. I look forward to your testimony. I apologize that I will not be able to remain for the entire hearing. I am involved in hearings going on in another committee. Senator Bentsen will preside over these hearings.

We have a host of fine witnesses. Actually, following you, there will be three panels.

So, Governor, we look forward to hearing your testimony and welcome you here.

STATEMENT OF HON. MARK WHITE, GOVERNOR, STATE OF TEXAS

Governor **White**. Thank you, Senator Chafee and Senator Bentsen. I appreciate this opportunity to testify before you today on a matter of grave consequence to the people of our State and to our environment.

For the record, I have submitted lengthier testimony, which I would like to have included in the record. I will summarize those statements here.

Senator **Chafee**. Fine.

Governor **White**. I would also like to submit to you the statements of the National Governors Association and the Coastal States Organization on this issue and have it also entered into the record. [See pp. 70 and 72.]

Senator **Chafee**. Yes.

Governor **White**. Those two organizations share the concerns that I and many others have raised regarding the safety and liability issues as well as an unproven need for ocean incineration and the importance of its proper regulation.

In opening, let me emphasize that this is an issue of growing concern not only to Texas. Neighboring States along the gulf coast as well as those States along the east and west coasts I think are just as concerned, even though Texas is the only State or the gulf coast is the only area that has been mentioned for a permit.

It is also important, I feel, to recognize that we in Texas fully understand and we are even comfortable with reasonable levels of risk in pursuit of greater social, industrial, technological, and economic progress. Texas has encouraged all along offshore drilling and gas drilling for oil and gas. Some amount of risk surrounds the operation of every single offshore drilling platform in the Gulf of Mexico today. But the tremendous benefits from that development for Texas and this Nation as a whole are substantial and they outweigh the reasonable risks involved.

Moreover, the offshore industry has been developed safely, minimizing the dangers through good planning and good leadership. That is all that we would ask from the Federal Government on the issue of ocean incineration.

Yet, frankly, when I look at the record, I am concerned about the sensitivity of an administration that proposes to sell off our national parklands and wants to buy Times Beach.

I think that what we are looking for is a kind of record that will instill confidence, build confidence, in the process. So when ocean incineration was first proposed, it quickly got our attention.

First I would like to discuss the lack of any logical sequence in the way the Environmental Protection Agency has handled questions about the viability of ocean incineration as being a safe and efficient disposal method.

A research strategy document from the Agency, made final in February of this year, outlines their perception of the research effort necessary for conclusive results on the efficiency and safety of ocean burning. In April, the EPA Science Advisory Board indicated the need for substantial additional research regarding the impact and effect of this disposal method. But before either of the two latter studies were released, the EPA had proposed a set of ocean incineration regulations. If finalized, these would allow the EPA to begin processing incineration permits in the very near future without the benefit of that essential research that I think we all agree must be received.

The EPA apparently assumes that a research strategy alone is sufficient to begin this permit process, since they still have not indicated how or even when any of the research would be undertaken.

It is our position that such hasty and premature actions by the EPA are illogical and should not be permitted to go forward unchecked.

Why has this process not followed a logical sequence of events? Is it because of external pressures on the Agency to begin issuing permits to impatient but aggressive and persuasive potential applicants? Is it because the Maritime Administration took a high-risk financial gamble by providing $55 million in loan guarantees for the construction and testing of two incineration ships?

Let me turn to an area that you are most familiar with. The proponents of ocean incineration frequently cite as justification, if not endorsement, of ocean disposal technology the RCRA amendments approved last year by your committee. I believe that does a disservice to the achievements that you made in those landmark amendments.

As I read it, what you did in RCRA was to place the burden of proof on the EPA in determining the safety and appropriateness of hazardous waste disposal methods. Henceforth, EPA must within a certain time demonstrate the safety of hazardous waste disposal in landfills, surface impoundments, and injection wells. Otherwise it is automatically banned.

I applaud that decision to relieve our individual citizens, our landowners and State and local governments from the burden of having to prove that a disposal method is not safe and to guarantee that it will not be permitted unless EPA proves that it is. That is exactly the perspective I hope you will take in considering the deep reservations that we have about the EPA's approach to ocean incineration.

Have they proven that an accident at sea involving an ocean incineration vessel can be cleaned up? Can they prove that the effects would not be irreversible? Has the EPA proven that there would be sufficient liability protection to cover the full impact of an accident at sea? Has it proven that the bioaccumulation from even normal operation of incineration vessels is acceptable? And is it certain that the Gulf of Mexico is the most appropriate place to pursue the program?

I reject the rationale that the impending disposal bans in RCRA are a valid argument to justify a headlong rush into ocean incineration. Those provisions should be cited in the spirit of their intent as a new standard requiring that safety must be demonstrated up front in every case.

The remainder of my testimony concentrates on the flaws in the proposed EPA regulations. My written testimony deals with these in considerable detail, but I will try to go to the heart of the matter as quickly as I can.

The liability question is of grave importance. In the event of a mishap or disaster, who is going to pay? The proposed regulations only require that the applicant demonstrate evidence of insurance coverage within a range of $50 to $500 million, yet to be determined. They do not deal specifically with the liability issue beyond the simple operator insurance. And no amount of insurance will benefit potential victims of a disaster if limits of liability are invoked under the Limitation of Shipowners Liability Act.

Attorney General Mattox's testimony, which you will hear later this morning, deals specifically with this legal puzzle, the virtually insurmountable legal hurdles that would effectively prohibit the victims of an ocean incineration disaster from recovering the full damages that are likely to occur.

The EPA's vague proposal on insurance did not adequately deal with our concern about the protection of the interest of third parties. And second, any limitation of liability related to ocean incineration operations I believe is unacceptable.

It is unlikely that a major spill associated with an ocean incineration vessel accident could ever be cleaned up sufficiently to remedy the real economic damage to the coastal area of Texas. Commercial fishing in our State is a $600 million industry. It lives or dies on the protection of a delicate ecological balance in the spawning waters for shrimp and other major catches.

Tourism, our second largest industry, is a central source of income and livelihood along the gulf. It is an industry that relies heavily on an attractive reputation. Those important sources of livelihood for Texas citizens could be severely limited, if not obliterated, by a major spill, and long-term reputational damage would be devastating.

We have experienced those very things by the biggest oil spill that ever occurred. Those are natural consequences.

Not just commercial fishermen but seafood dealers, hotel and marina operators, among others, would be potential victims.

Under our present laws, if a hazardous waste spill occurs on land, economic injuries are recoverable, but if the disaster occurs at sea, they would not be. I would suggest to you very strongly that that is the real reason we are seeing ocean incineration being pushed ahead of land-based alternatives. And the EPA, whose proposed regulations do not attempt to address these issues, is acting as a pliant partner.

There is absolutely no satisfaction in knowing recovery would be limited to the value of the ship and its essentially worthless cargo. We went through that fight over an oilspill. And no matter how much insurance they have, or they say they have, or liability that might exist, they still have that barrier to recovery. I think it is important to recognize that legal standard.

The cleanup costs alone, not to mention the high price of long-term health and environmental damage, can make Love Canal look minuscule compared to the stakes involved in this gamble.

In light of the phenomenal damage which could result from any mishap or disaster at sea, we view it as a Federal duty to ensure that full liability coverage be effective. Because the damages could be catastrophic, the indemnity must also be effective without regard to limit. If any question remains about limits on liability, then the EPA should require applicants to waive any limits as a condition of the permit, and these assurances must be given in writing.

EPA has to demonstrate the need for ocean incineration, as required in the Marine Protection, Research and Sanctuaries Act, despite their unsupported assertion to the contrary.

I believe that no further action should be taken toward permitting hazardous waste burns at sea until an adequate and substantiated needs assessment becomes final through established administrative process.

Our analysis of the EPA's proposals in three other areas—research, technical verification and procedures—leads us to numerous other specific objections. I pointed those out in the EPA hearings in April in Brownsville. They are also dealt with in the text I have given you.

I think you will find that each point raises important issues, and that in total they represent a serious and valid indictment of the manner in which ocean incineration is being dealt with by the EPA.

I will be pleased to try to respond to any questions that you might have. I have further remarks, as I said, submitted for the record.

Senator **CHAFEE**. Your entire statement will be included in the record, Governor.

That is a very powerful statement you have delivered. I remember when the hearings were held in Brownsville. To understate it, they were well attended.

Governor **WHITE**. Yes, sir.

Senator **CHAFEE**. And lively. I think all the EPA people that went received a combat award when they returned. It was an unforgettable experience. They remember it well.

We are delighted that Senator Lautenberg, from New Jersey, is here. Senator, if you have a statement, this would be a proper time to deliver it.

Senator **LAUTENBERG**. Mr. Chairman, I thank you. I do have a statement.

Senator **CHAFEE**. Before you deliver that, may I say again, Governor, I apologize that I do have to leave. Senator Bentsen will conduct the balance of the hearing. I want to thank you and the other witnesses for coming.

Senator **BENTSEN**. Thank you very much, Mr. Chairman.

Senator **LAUTENBERG**. Mr. Chairman, I would not want to take time away from this hearing, therefore, I ask that my opening statement be inserted into the record, if that is agreeable.

Senator Bentsen [presiding]. Without objection.

[The statement follows:]

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Thank you, Mr. Chairman. Mr. Chairman, I commend you for scheduling these oversight hearings on ocean incineration.

Hazardous waste disposal is among the most important environmental challenges of the next decade. We must develop new methods and technologies to address hazardous waste disposal needs. The reduction of hazardous waste at its source and an increase in recycling and recovery of such waste will be essential. Some waste, however, will remain to be disposed of.

It is within this context that incineration technologies should be viewed. Incineration under properly controlled conditions offers an important option for disposing of hazardous waste. Advocates of ocean incineration believe that this technology has a role to play in the safe disposal of toxic waste.

There are, however, a number of serious concerns which have been raised about ocean incineration and EPA's handling of ocean incineration regulation. These concerns must be addressed satisfactorily before commercial incineration of liquid organic waste can be allowed to proceed. That is why these hearing are so important. They provide an opportunity for the committee to further investigate the issues associated with ocean incineration, and to hear the views of those with contrasting positions on the promise of this technology.

To my mind, several issues remain open about ocean incineration:

What are the effects of ocean incineration?

In April EPA's Science Advisory Board issued a report on incineration which concluded that there are areas of uncertainty about the toxicities of emissions and the effects this technology could have on the public health and the environment. I am particularly concerned about these findings because the Atlantic incineration site is 140 miles off Cape May and New Jersey ports may be used as a collection point for transport to sea.

Is there a need for ocean incineration?

The New Jersey Hazardous Waste Facilities Siting Commission recently issued a report on needed hazardous waste facilities in New Jersey. The commission concluded that all liquid organic hazardous waste should be burned in land incinerators with hazardous solids and sludges. This report will be subject to review in New Jersey. But, it does raise the issue of need with respect to ocean incineration.

What are the Hazards of using urban port transfer points?

I am concerned about hazardous waste being brought into an urban area and the potential effect that a spill of this waste could have on land or in coastal waters.

Mr. Chairman, the Ocean Incineration Program has gotten off to a bumpy start, leading some to lack confidence in EPA. This problem was heightened, in my view, when EPA proceeded with a public hearing in New Jersey in April on its proposed ocean incineration regulation without giving the public adequate opportunity to review two Government reports on ocean incineration.

Mr. Chairman, I intend to explore these issues during the committee's oversight hearings. I look forward to working with the committee on these and other issues concerning the safe disposal of hazardous waste.

Senator **BENTSEN**. Governor, I understand the chairman's problem. With the usual efficiency of the Senate, I too have three meetings going at this time, but this is obviously my priority. We have the Finance Committee and the Intelligence Committee meeting. And I carry this around, as I am sure you do, and it tells me where I am to be every 15 minutes and on the back it tells me who I am.

But I am most appreciative of your thoughtful statement because I think you raised some very important issues. I particularly appreciated the detailed analysis of the regulations that we are talking about here.

I can't help but remember the spill at the Bay of Campeche. When they speak about the fact that this burn is 180, 200 miles offshore, the spill at the Bay of Campeche was farther than that from some of our Texas shores and yet we suffered by it and we saw some of the ecological disruption that took place as a result of that.

In listening to your statement, in no way do I want to see the burden created by EPA regulation shifted to the States, but I do want to understand better what authorities you have available to you within the State to control ocean incineration activities.

Governor **WHITE**. Quite frankly, we have very little, other than legal action that has been taken by the Attorney General to date.

Senator **BENTSEN**. I would like to ask you about the task force that you have in this regard, how was it structured?

Governor **WHITE**. The task force we formed on hazardous waste management was composed of some 33 members of diverse interests throughout our State. There was a consensus approach developed, and we had 70 recommendations for improving hazardous waste disposal and management. We passed legislation in this session of the legislature that will have a very favorable impact, I think, in recognizing the need for industry to have a viable alternative or technique available for the disposal of their byproducts. And if there is any State in the Nation that understands that better than Texas, I don't know who it is.

Senator **Bentsen**. In this session of the Texas Legislature, you passed the Hazardous Waste Management Act.

Governor **White**. Yes.

Senator **Bentsen**. How does it work?

Governor **White**. It will operate through the agencies that we have—the Air Control Board, the Texas Water Commission. Obviously, it is a newly created legislative opportunity. It is going to be dealing with onshore disposal techniques, injection wells, as well as other techniques.

We have today extremely effective incineration programs in Texas for disposal of toxic wastes. Our concern is largely based on the premise that if this is such a safe technique, why do they go out in the middle of the Gulf of Mexico to burn this toxic waste? And they really go outside of our jurisdiction.

For that reason, I think it is important we have congressional action taken to constrain them.

Senator **Bentsen**. Along the lines of that, if the EPA went ahead and issued its regulations without addressing these deficiencies that you have spoken to, is the State prepared or is it in a position to take formal action to forestall implementation of the program?

Governor **White**. If they follow the rules, which we don't think they have, thus giving rise to the litigation which is pending, then I don't know that we have anything that we can do to stop them from that permitting process. As I understand it, the permits will be for ships that will be leaving the Louisiana port going off into international waters to dispose of the contents of those ships, and there is very little Texas can do to touch it.

Right now we are trying to work this through the courts for their failure, and we think it is a clear failure, to follow their own regulations. We feel that we will be exposed to extreme risk without any opportunity for the State to impose any of its regulatory constraints, safety or otherwise.

Senator **Bentsen**. Senator Lautenberg, a very active member of this committee, has made some major contributions on some of these environmental questions. I would like to now turn any questioning over to him.

Senator **Lautenberg**. I thank you, Mr. Chairman.

I welcome you, Governor White. It is nice to see you again.

I come from the State of New Jersey. We could perhaps fit that State into one small corner of one of your big ranches there. But we are the most densely populated State in the Union. We rate ninth in the Nation in population, despite the fact that our geographic boundaries are relatively small.

We have very, very serious problems on what to do with the material that is created by society. I don't know whether you have the waste disposal sites, to accommodate your need to dispose of waste and trash. The material that results in our State is created by the largest number of Superfund sites on the national priority list. We have more than our fair share.

Governor, in the State of Texas, I take it you are able to locate disposal sites conveniently relatively, I would say.

Governor **White**. Senator, that is a difficulty. That was the reason for our task force on the hazardous waste management.

I am not here today to tell you that we can, and I don't know that we have solved this problem, but I am suggesting that we have to solve the problem, and I am prepared to go forward and advance some alternatives to this present proposal.

We have a disposal facility located along the Houston ship channel for the disposal of high-level toxic wastes through this incineration process. And the EPA, in every study we have seen, shows it to be a very effective and apparently environmentally safe program. So therefore, ~~I am not arguing~~ over whether the smokestack, it is safe to breathe the air. The proponents of this proposal, this incineration, say that it is. I am not here arguing to say that it isn't.

I am just suggesting to you that if it is as safe as they say it is, why would you have to go out 160 miles in the Gulf of Mexico to do it and expose this whole enterprise to even greater risk of an accident at sea?

Let me mention, with all the sophisticated equipment that we have on the U.S.S. *Coral Sea*, just about the time we were having those hearings down in Brownsville, Senator Bentsen, the *Coral Sea* right fresh out of refitting runs over a ship out on the high seas. Had this been that incineration ship, where would we be today? Would that incineration ship have had the ability to survive such a collision on the seas? I am not aware whether it would or not, but that is a question that must be answered, I believe, before we go forward with this project.

When I listen to the people or the proponents of this at the EPA, they are acting with the same degree of confidence as the builders of the *Titanic*. And I, frankly, don't know that we have had icebergs in the Gulf of Mexico in quite some time, but there are major shipping accidents that occur on a very frequent basis.

I am advised that the Coast Guard has reported over 124 collisions from just north of Corpus Christi to just west of Port Arthur over the past year. Those 124 collisions represent more than $25,000 each in damage. That is the prospect of putting that ship on the high seas and the resultant damage that would occur to our environment as a result of some collision, and that is a much greater prospect I think than we should be willing to accept.

Senator **Lautenberg**. Governor, your reasoned and balanced approach to this is one that we take great cognizance of. I don't want to argue the other side because I am not persuaded that that is an appropriate alternative. New Jersey's Hazardous Waste Facility Siting Commission recently issued a report on hazardous waste facilities in our State. That commission concluded that all liquid organic hazardous waste should be burned in land incinerators, with hazardous solids and sludge.

This report is going to be further reviewed, but it rates the issue of the need with respect to an alternative, one of which might be ocean incineration.

Not to press the issue, but the fact that we have had these numerous collisions, the fact that your State had a devastating result from the tanker collision that occurred there, that doesn't prevent us from continuing to use that means of transportation, perhaps the only one available, for transporting oil. We have to continue to perfect the navigational techniques, the structures, et cetera, to minimize, if possible eliminate, the damage that can come from something like that. But it doesn't prevent us, in the process, from using it.

I think the same thing perhaps could be true, assuming that all the tests can be passed, particularly air quality tests, before we start this process.

But accidents occur. Certainly we saw it in oil exploration off our country. But we have to continue to pursue these things.

Governor, I am pleased to see you here. I invite you to visit New Jersey, as I am sure Governor Kean has done, and help us in our problems of locating facilities in the most densely populated State in the country. If you fly over our State, it looks green and pretty, and 20 percent of it is still forested, but we have lots of people packed in. As a matter of fact, we probably have more people per square foot than you have cattle out there. I know you have a lot of cattle.

So we invite you. We are pleased to see you here, Governor.

Senator **Bentsen**. Senator, when you made reference earlier to the Houston ship channel, let me say that with studied effort and enough investigation and good legislation, as we finally passed in this committee, things can be done for problems like that one. At one point before we passed that legislation the Houston ship channel had been said to be too thick to drink and too thin to plow. It had the highest octane rating of any body of that size in the country. Now you have fish swimming there and a great deal of progress has been made.

Governor **White**. They are the toughest fish and shrimp you have ever seen, though.

Senator **Bentsen**. Thank you very much, Governor.

Governor **White**. It has been an improvement, no question about it. Thank you, Senator.

Senator **Bentsen**. Thank you. I appreciate it.

I would like to say to the other witnesses that we have quite a number of witnesses here and we will be having another hearing in July at which Government witnesses will be testifying.

In addition, we have some more conflicting things that are coming up at 11, but we will continue with these hearings. I would ask all witnesses to hold their statements to 5 minutes oral and we will take their entire statements for the record.

The next witnesses will be a panel with Brian Berwick, assistant attorney general for the State of Texas who has the jurisdiction over the enviornmental protection division; and Mr. Rick Gimello, who is the executive director of the New Jersey Hazardous Waste Siting Commission.

Gentlemen, we are very pleased to have you here. Mr. Gimello, if you will lead off.

STATEMENT OF RICK GIMELLO, EXECUTIVE DIRECTOR, NEW JERSEY HAZARDOUS WASTE SITING COMMISSION

Mr. **Gimello**. Thank you, Senator.

Senator **Bentsen**. This is a 5-minute timer, I am advised.

Mr. GIMELLO. Thank you, Senator. Good morning. My name is Richard Gimello, and I am the executive director of New Jersey's Hazardous Waste Facilities Siting Commission. I am pleased to be here this morning to provide you with some of the commission's thoughts with regard to ocean incineration.

Senator, Chairman Dodd expresses his regrets. He had a previous engagement.

I will focus my comments today primarily on the need for ocean incineration, how that need could or should be established and, to a lesser extent, provide some comments on the proposed EPA ocean incineration regulations.

Created in 1981, the siting commission in New Jersey has the responsibility of analyzing current hazardous waste generation and management practices in New Jersey; projecting future demand for hazardous waste treatment, storage and disposal facilities; determining the number and types of facilities necessary to manage New Jersey's hazardous waste; and finally, designating sites for those facilities.

The siting commission has been struggling to quantify New Jersey's hazardous waste management needs in the belief that unless and until New Jersey's specific facility requirements can be demonstrated, any attempt to site new facilities will fail.

We have completed our efforts and the commission's conclusions are reported in detail in the recently published "New Jersey Hazardous Waste Facilities Plan." The plan is a comprehensive management strategy for meeting the treatment and disposal needs of our State. The facilities plan is also a policy document which promotes a new hazardous waste management hierarchy in New Jersey. This hierarchy, in order of preference, includes: Source reduction, recycling of waste, recovery of both energy and usable parts, treatment and incineration, and secure disposal.

The commission has assigned current and future hazardous waste streams to those technologies deemed most appropriate given this management hierarchy. The commission has concluded that New Jersey has a shortfall in incinerator capacity and disposal capacity. The commission is therefore seeking one or more land-based rotary kiln incinerators with a total capacity of between 50,000 to 75,000 tons per year and an 80-acre land emplacement facility, which should provide capacity for 20 years.

A rotary kiln incinerator is specified in the plan because of its versatility in burning sludges, solids, and liquids.

The commission's study indicates that given anticipated source reduction measures and the State's Superfund cleanup activities, an ever-increasing percentage of New Jersey's waste will be sludges and solids, which cannot, in a practical fashion, be incinerated on marine vessels.

The New Jersey facilities plan estimates that up to 131,000 tons of hazardous waste should be available for incineration in 1988. Of that amount, 46,000 tons would be liquids, while solids and sludges account for 85,000 tons, or 65 percent, of the total incinerable hazardous waste stream. Our data further indicate that these solids and sludges, as a percentage of the total waste stream, will increase.

It should be noted that in quantifying New Jersey's needs for new facilities, the commission has been cognizant of regional needs and has attempted to avoid a purely parochial position. The commission has factored imports of hazardous waste at 1983 levels—a total of 166,800 tons per year—into New Jersey's waste projection.

The commission urges that EPA undertake a similar comprehensive effort to evaluate objectively the need for ocean incineration. Furthermore, it should be noted that both the Ocean Dumping Act and the London Dumping Convention require such an examination.

The Ocean Dumping Act states that ocean incineration can only be permitted when: One, there is a need for such disposal, two, after a consideration of land-based alternatives and recycling, and three, after a consideration of the effect of such ocean disposal on human health, marine life, and other uses of the ocean.

The London Dumping Convention Treaty likewise prohibits the United States and other signatories from going forward with an ocean incineration program unless the countries carefully consider the availability of land-based alternatives and the effect of ocean incineration on marine life and other uses of the sea.

I think it is evident that EPA cannot issue regulations under the Ocean Dumping Act which violate either the terms of that act or the terms of the London Dumping Convention. However, at this point in time it is our opinion the proposed regulations do not indicate that EPA has adequately analyzed any of the critical and mandatory considerations required by the act and the convention.

To date, EPA has failed to demonstrate the need for ocean incineration. In fact, the proposed regulation states that:

> [N]eed will be presumptively demonstrated if ocean incineration poses . . . no greater risks than practicable land-based alternatives.

This is plainly inconsistent, in our view, with the London Dumping Convention's presumption against ocean dumping and in favor of practical land-based alternatives.

Under this treaty, the United States must first demonstrate that land-based facilities and methods of treatment are inadequate to handle our liquid waste disposal needs. This determination should be made before EPA embarks on the major ocean incineration program proposed in the regulations.

The definition of need contained in the EPA proposed regulations seems exceptionally narrow. To presume the need exists one must go beyond a comparison of risk, which is the standard currently proposed by EPA, to a consideration of existing and future requirements. Such an expanded definition would allow EPA to factor the efforts of States like New Jersey, which have actively sought to define technological needs, into the permit review process.

The question of need is further complicated by the inadequacy of the EPA's commercial incineration market study.

In appendix C of EPA's incineration study, the Office of Solid Waste advises against using the national survey data to develop regional waste generation and management estimates because the data have been "interpreted beyond statistically valid limits" and therefore suggest only possible outcome. Given the vast changes in both the market and the regulations, they do not present an accurate picture of current conditions.

More reliable information regarding the types and quantities of hazardous waste currently being generated exist on the State level and EPA should consult with individual States.

For example, there are 24 States that have laws specifically dealing with the siting and development of new commercial hazardous waste facilities. These States have recently formed an organization entitled the "Consortium of State Hazardous Waste Siting Authorities, Inc." This majority of the consortium's members have either completed or are in the process of defining their waste management needs. These State-based studies will more accurately define the regional market needs and the technological preference of individual States. This information will be shared with EPA as it becomes available; however, it is not reflected in the current statistics used by EPA.

The New Jersey Siting Commission and the consortium are extremely concerned that the integrity of individual State siting processes not be preempted or compromised by a Federal push toward ocean incineration.

It is recognized by proponents and opponents of ocean incineration alike that no one State, and in most areas of the United States no one region, will generate the volumes of liquid waste necessary to support an ocean incineration operation. Therefore, EPA must work closely with individual States to avoid potential conflicts with State siting efforts which would be imposed by the Federal designation of specific burn sites.

It is the commission's hope that EPA will recognize that all State and local regulatory requirements, including specific siting efforts, be reflected in any Federal regulation and/or siting procedures.

Senator BENTSEN. Your time has expired.

Mr. GIMELLO. In summary, Senator, the Commission feels that the need has not been demonstrated to the degree we have undertaken in New Jersey. As a member of the consortium, we know that more current information is available, and we hope that EPA will seek our advice in that regard.

I thank you for the time.

Senator BENTSEN. We will hold questions until both witnesses have testified. Mr. Berwick, if you would proceed.

STATEMENT OF BRIAN BERWICK, ASSISTANT ATTORNEY GENERAL, ENVIRONMENTAL PROTECTION DIVISION, STATE OF TEXAS

Mr. BERWICK. Senator Bentsen and Senator Lautenberg, my name is Brian Berwick and I am an Assistant Attorney General with the Environmental Protection Division in the Texas Attorney General's Office.

Attorney General Jim Mattox of Texas thanks you for inviting him to testify here today and sends his regrets. He went to Alaska for a conference and he caught a cold and, as a result, he was unable to come. He felt as though he ought not bring his cold here to Washington, DC, that he ought to keep it in Texas.

I would like to discuss some of the legal issues that have already been touched upon by Governor White that surround ocean incineration.

I want to make clear at the outset that there is a lot of legal uncertainty in the area, and my remarks should not be construed as endorsements by the State of Texas of any given line of legal argument. Instead, they represent my best prediction about how a judge would rule if certain issues arose today.

I am very concerned about whether private parties economically injured by accidents at sea involving toxic wastes would have adequate legal remedies available to them. If there was a catastrophe, without a doubt there would be severe injury; for example, to commercial fishermen. Naturally, such plaintiffs would seek theories under which to sue the vessel and its owner for compensatory damages. Their best hope and, indeed, probably their only hope would be the law of maritime tort. This is a body of Federal law that is supplemented by Federal statutes.

The hypothetically injured shrimper whose business has been injured would immediately be met by a claim by the vessel owner of limitation of or exoneration from liability under the famous Limitation of Shipowners Liability Act, which was passed in 1851. This limits the liability of an owner for tort claims to the value of the vessel and the freight charges owed to it after the incident causing the injury. The exception is if the vessel was unseaworthy and the owner knew about it. The ordinary perils of the sea, including negligent navigation, which causes the great bulk of marine accidents, do not constitute unseaworthiness. So if the spill of waste that injured the Texas shrimper was caused by human error, which is the most likely event, the owner's liability will be limited.

If the vessel had a high value after the injury, high enough to cover the many claims, then the shrimper and other injured people would have some hope. But if the vessel sank, let's say, or was destroyed by fire, then the shrimper would get a pro rata share of a very small fund indeed. He might get a pro rata share of nothing.

Nor does it help if the owner carried a big liability policy because under liability policies, the insurance company pays off only if the insured party is held legally liable. The insurance company and its lawyers who come to the defense of the shipowner can raise any defense that is available or limitation that is available to the shipowner. Without a doubt, they would raise the Limitation of Shipowners Liability Act, and at least they would have an excellent chance of prevailing on that.

Well, as bleak as the picture is for a shrimper, at least he has a better hope than people whose livelihoods depend only indirectly, in quotes, on the Gulf of Mexico. A recent fifth circuit case extended the famous Robins Dry Dock Doctrine and made clear that except in a very narrow set of circumstances, people who are just, in quotes, economically injured could not recover any money at all from the vessel or its owner. The case I am speaking of is the *Motor Vessel Testbank* case which was decided earlier this year.

The Louisiana court found that indirect economic loss, even though it is foreseeable, is not compensable in maritime tort except for those who sustain physical damage to a proprietary interest. What happened there was there was a large spill of pentachlorophenol at the Mississippi Gulf outlet, and as a result the U.S. Coast Guard embargoed a large area of waters, waters which a particular group of fishermen were used to fishing in and making their living out of. They were held to have a cognizable claim. But marina and boat rental operations, wholesale and retail seafood enterprises, restaurants, tackle and bait shops, and the like, were entirely thrown out of court. They were held to have no claim whatsoever. The reason was the fifth circuit said that it is necessary in these very large events to impose a pragmatic limitation on the doctrine of foreseeability.

This is a situation where if a similar spill had occurred on land and there was widespread economic injury, as long as it was foreseeable, it would have been potentially compensable.

I am concerned about the inequities that would be worked by the application of both the Limitation of Shipowners Liability Act and the M/V Testbank Doctrine to a catastrophe involving an incinerator vessel. Often it is going to be difficult enough to prove a causative link between the spill of waste and the injury complained of. Our system of justice does require the plaintiff to bear this burden of proof. If they can climb that high tree, then they ought to be fully compensated.

Everybody with foreseeable injury should be fully compensated. The present scheme of law falls far short of ensuring such an outcome.

The EPA regulations really do not touch on this. EPA argues they cannot touch the liability issue.

You have asked me to comment, and I will do so very briefly, so as to summarize, about the coastal zone management plan and whether, if Texas had a coastal zone management plan, it would give the State a measure of additional influence over its own destiny.

In my opinion, it is very unclear whether that is so. The reach of a coastal zone management plan, if Texas had one, which I wish it did, beyond the coastal zone itself, which in Texas goes out to about 9 miles, three marine leagues, the reach of it is very unclear. It is by no means certain that a coastal zone management plan would help.

Senator BENTSEN. Thank you.

I will defer my questions to Senator Lautenberg. He has another commitment. If he would proceed now with any questions he might have.

Senator LAUTENBERG. I thank you, Mr. Chairman, and thank the witnesses for very enlightening testimony.

Mr. Gimello, welcome, from one New Jersian to another.

Mr. GIMELLO. Thank you, sir.

Senator LAUTENBERG. We feel our needs are special in particular, but of course what happens in New Jersey is indicative of what we can expect around the rest of the country because we have to work so much harder to solve the siting problems, as I described before.

I want to focus my questions to you on the commission's activities. You said that the need has not been ascertained. Of course, until that need is ascertained, there is no point in going ahead with demonstration projects where there is still some uncertainty.

But just to clear the record, what process will the commission use to find a site for land-based incinerators? What is going to happen there?

Mr. **Gimello**. We are currently, Senator, searching. We have on the books in New Jersey very specific siting criteria which eliminate large portions of the State from consideration and direct us to other areas.

We are this summer, through an engineering contract, searching for sites to meet the needs specified in our management plan. We hope that by the end of the year we will have identified potential sites for the uses we indicate.

Senator **Lautenberg**. How many communities have welcomed a site facility?

Mr. **Gimello**. I must say, Senator, we haven't had any welcome mats.

Senator **Lautenberg**. That is the problem. Everybody is saying well, OK, let's put it over there. What kind of reaction have you seen engendered by the consideration of ocean incineration?

Mr. **Gimello**. The proposal for a port facility in Newark, NJ, dates back quite some time in the State of New Jersey. There is solid citizen, and I think it is fair to say, political, opposition to that proposal. The proposer has not submitted an application to the siting commission, and when and if he does so, we will review the application objectively against the criteria we have established. So our management plan, although it specifies our specific needs, is not an outright denial of any kind of permit, ocean incineration included.

Senator **Lautenberg**. But you talked about that kind of a site. You are talking about a site for loading the materials.

Mr. **Gimello**. That is correct.

Senator **Lautenberg**. That engenders the kind of hostility we know so well when the community feels that there is too much risk associated with it.

You say you have the New Jersey criteria, for establishing land incineration sites. Do you feel you are going to be able to come up with something that doesn't have such resistance, that we are going to be able to say OK, this is it, and this is where it is going to be?

Mr. **Gimello**. Senator, I don't think anyone expects a community will not resist a proposal. Our siting act is a very lengthy process that attempts to equalize the decisionmaking and include the citizens in that decision as early as possible. The commission has the final say.

I do feel that we will be successful because of the dire need that we have, and you are so well aware of, with regard to Superfund cleanup. I think we will get there, sir.

Senator **Lautenberg**. Unfortunately, the need is not as apparent in many cases as is the risk apparent. That is the problem we have.

Those involved with the longer range view of where our State is going in dealing with waste, hazardous and otherwise, have some tough decisions to make. It is never going to be totally popular. Do you see a role for ocean incineration for diposal of low-energy liquid waste?

Mr. GIMELLO. Senator, I would like to say that I think ocean incineration is an option that needs to be examined. Unfortunately, it has regional consequences, and I think those regional consequences have to be factored into the decision.

Now, nothing I said today and I hope nothing was interpreted to indicate we do not think it needs examination. It certainly does. And we will examine it if we get an application. So I think there is a role.

The question then becomes is there a need for it? Should we go to the ocean? Are there alternatives? And in that context we will evaluate any application.

Senator LAUTENBERG. It is fair to say, isn't it, Mr. Gimello, that we can't rule out the review of all alternatives? I mean there just is no way that we can satisfy all the interests, all the views of the community, by taking one course or another.

Mr. GIMELLO. I certainly concur, sir.

Senator LAUTENBERG. A last question, Mr. Chairman. Let's assume that EPA finalizes its regulations and allows the ocean incineration. How would the commission decide whether to allow New Jersey to be used as a transfer-site for ocean incineration vessels? What is the process there?

Mr. GIMELLO. The key process there, Senator, is first of all, does the proposed port meet the siting criteria; and then is it necessary, given the kinds of needs that New Jersey has identified in our plan; and then to look at the regional implications.

We haven't seen a specific proposal. We are not sure of the kinds of wastes that will be going through the port or might go through the port for burning at sea. So once we have that kind of information, we will judge it against the kind of market studies and the data base we have in place in New Jersey.

Senator LAUTENBERG. I thank you, Mr. Chairman, for your patience and your distinguished leadership. You recognize some of the scheduling problems we have. You were kind to let me take this time. Thank you very much.

I would like to submit additional questions for the record.

Senator BENTSEN. Of course. Without objection, that will be done. [See p. 74.]

Senator BENTSEN. Gentlemen, you have raised some troubling questions about the liability issue. Mr. Berwick, you might answer this. This question of compensable damages apparently goes beyond the proposed liability regulations of the EPA; is that correct?

Mr. BERWICK. Yes, sir. EPA regulations require so and so much insurance. They don't say exactly what the policies shall say, and that is all important.

What I mean is there is insurance and insurance. There are all different kinds. The present proposed regulations are extremely general in what they say about the amount of coverage and the kind of coverage. But beyond that, again, to speak of insurance and having *x* amount, let's say a huge amount of insurance, is to beg the question: What is the basic liability? You must reach the liability question before you reach the question of coverage by a policy.

Senator BENTSEN. To get into third-party damages and recoveries is particularly troubling, it seems to me. Do you have any proposed changes that might be made in the law to address that kind of a concern?

Mr. **Berwick**. I believe that EPA could challenge the industry to waive the Limitation of Shipowners Liability Act as a condition of receiving a permit. In addition, they could challenge them to waive the protection of the Robins Dry Dock/MV Testbank Doctrine. And if that were done, then they would indeed be exposed to liability and their insurance coverage would have meaning.

At present, to carry an enormous amount of liability insurance for third-party type liability—injured fishermen, shrimpers, hotel owners, and the like—well, that would be cheap coverage because there is very little likelihood that liability would ever be imposed. So you might have a fair-sized premium for the first 100,000, but you are probably not going to pay too much for each succeeding 100,000.

Senator **Bentsen**. Where would you draw the line? Suppose you have a regular cargo vessel carrying some very powerful chemicals. How do you differentiate in the liability there?

Mr. **Berwick**. That is a good question, Senator. I think the answer is this: Without a doubt, a lot of very hazardous material does move upon the sea. Of course, I suppose in terms of pure volume and weight the largest fraction of that material would be crude oil. Crude oil is greatly to be distinguished and, indeed, other more hazardous cargoes are greatly to be distinguished from the extremely toxic and extremely persistent highly refined synthetic waste products that are presently contemplated as being appropriate for ocean incineration. I know of nothing as toxic and as persistent as PCB's that presently travels in bulk across the open ocean.

Senator **Bentsen**. Gentlemen, you raise some questions that I think are very important in these hearings. We have the limitation of time. So what I am going to do is ask that you address certain written questions that we will send to you and that you help us complete the record. I have the concern of other witnesses that have yet to be heard.

Thank you very much.

Mr. **Gimello**. Thank you, sir.

Mr. **Berwick**. Thank you very much.

Senator **Bentsen**. Senator Mitchell, who has a deep interest in this and is attending another meeting at the present time. He has asked that I make his remarks a part of the record. We will do so at this point. I will also include a statement from Charles Graddick, the attorney general of Alabama.

[The statements follow:]

George Mitchell

OPENING STATEMENT

SENATOR GEORGE J. MITCHELL

SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

JUNE 19, 1985

Mr. Chairman: There are few issues which generate the strength of opinions as does the concept of incineration at sea of hazardous wastes. I am familiar with the key elements of the issue, but look forward to these hearings as an opportunity to hear the view of both sides in greater detail.

Incineration at sea involves a large number of technical problems and obstacles. I expect that some and perhaps all of these obstacles could be overcome in time. These technical problems, however, can dominate the debate on this issue and may cause us to overlook other important considerations.

I am concerned, for example, about the soundness of any long term plan for disposal of hazardous wastes in the ocean environment. There is a great deal that we do not now about how these pollutants, even the low volumes left after incineration, would affect marine systems. While it may be fruitless to expect a risk free method of hazardous waste disposal, ocean incineration may be a gamble leading to irreversible damage of the oceans. Because we know how complex marine environments are and how little we know about interactive effects, we should seriously consider a policy which demands that plans for disposal in the ocean meet a higher standard than more conventional disposal methods.

I am also concerned that, even if we determine that incineration at sea is the best disposal method available, we may never be able to effectively account for the risks of accidents at sea. An accident, such as a collision in a busy harbor or an explosion at sea could result in massive loss of hazardous pollutants at sea. The environmental effects of such an accident would be far greater than the oil spills we remember from the beginning of the environmental movement. As any Maine fisherman would tell you, unpredictable events are predictable at sea.

Finally, I am concerned that the availability of an "out of sight, out of mind" method for disposal of hazardous waste may become an easy alternative, even in light of potential problems. The demand for a disposal option is great. There are estimates that we may see a fleet of up to 30 incineration ships from a number of ports. While the program under consideration today is much more modest, it is not clear what would prevent a small program from quickly growing large.

Despite the many technical problems and the difficult policy issues I have just mentioned, many argue that incineration at sea poses a lower risk to the public than do land based incineration or other disposal options. While I have reservations about incineration at sea, it is important to make any policy regarding at sea incineration a part of a larger policy which accounts for the pressing need for some viable disposal method.

Mr. Chairman, I look forward to hearing the views of witnesses at the hearing today and at the hearing scheduled for mid July. I hope that these hearings will give us a chance to look closely at both technical problems and the difficult, broader issues posed by the concept of incineration at sea of hazardous wastes.

STATEMENT OF CHARLES A. GRADDICK
TO THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
JUNE 19, 1985

Mr. Chairman, members of the Committee on Environment and Public Works:

My name is Charles A. Graddick. I am presently the elected Attorney General of Alabama and I appreciate the opportunity to be here today to present this short statement on behalf of the people of the State of Alabama.

For more than three years my office has been combatting the current proposal to load organo-chlorine hazardous and toxic waste from the port of Mobile and incinerate them in the Gulf of Mexico. We have attended a number of public hearings in Texas and in Mobile, Alabama over the past two years to voice opposition to EPA and CWM proposals. Most recently, we attended the EPA sponsored hearing on its draft ocean incineration regulations held in Mobile on May 2, 1985, to voice our opposition to the regulations. While we have numerous technical objections to the proposals, we believe that there are basically three glaring faults with the regulations.

First, the EPA has not adequately demonstrated the need for ocean incineration. The EPA "needs" study, in my view, is a jerry-rigged affair, designed to justify conclusions already rendered by the agency. It is worthy of note that the "needs" study was released by EPA after the proposed regulations were submitted. In addition, even if one considers the data which EPA utilizes in its "needs" study as being correct, there is no clear demonstration of the necessity for ocean incineration.

STATEMENT OF CHARLES A. GRADDICK
TO THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
JUNE 19, 1985

Mr. Chairman, members of the Committee on Environment and Public Works:

My name is Charles A. Graddick. I am presently the elected Attorney General of Alabama and I appreciate the opportunity to be here today to present this short statement on behalf of the people of the State of Alabama.

For more than three years my office has been combatting the current proposal to load organo-chlorine hazardous and toxic waste from the port of Mobile and incinerate them in the Gulf of Mexico. We have attended a number of public hearings in Texas and in Mobile, Alabama over the past two years to voice opposition to EPA and CWM proposals. Most recently, we attended the EPA sponsored hearing on its draft ocean incineration regulations held in Mobile on May 2, 1985, to voice our opposition to the regulations. While we have numerous technical objections to the proposals, we believe that there are basically three glaring faults with the regulations.

First, the EPA has not adequately demonstrated the need for ocean incineration. The EPA "needs" study, in my view, is a jerry-rigged affair, designed to justify conclusions already rendered by the agency. It is worthy of note that the "needs" study was released by EPA after the proposed regulations were submitted. In addition, even if one considers the data which EPA utilizes in its "needs" study as being correct, there is no clear demonstration of the necessity for ocean incineration.

We are concerned that ocean incineration, if it becomes a national policy, will divert funds, and decrease the drive to find new and more suitable means of destroying hazardous and toxic wastes; such as are now being investigated. EPA's scientific advisory board in conducting its review of EPA's ocean incineration program, listed many glaring gaps in data and conclusions made by EPA which were not scientifically supportable, such as the relationship between combustion efficiency and destruction efficiency. Our reading of the scientific advisory board's report, both the draft report and the final report, leads us to the conclusion that considerable research is necessary even before additional research burns should be allowed.

Second, the EPA regulations make no provision for consideration of the background or the past record of would-be permittees for ocean dumping permits. It would seem to us that one should not entrust activities which are as critical as this to companies or individuals who, in the past, have demonstrated their inability or unwillingness to comply with current regulations and environmental laws. We suggest that the absence of regulations which not only allow EPA to consider such matters in granting ocean dumping permits but mandate EPA's consideration of these matters fatally flaws the proposed regulations.

Third, and perhaps most important to the state of Alabama, no federal agency, at present, has adequate guidelines or regulations which address port or loading facilities for vessels which would be transporting hazardous or toxic wastes. Under the most recent proposal for loading hazardous or toxic waste, the would-be permittee chose the port of Chickasaw, Alabama as its loading site. The physical location was approximately 50 miles from sea lanes and in the northern part of Mobile Bay in an area with difficult navagation hazards; an area with ongoing marine construction, an area without adequate land transportation access routes and without adequate fire protection facilities, an area in which the local officials lack necessary training in spill containment or clean-up procedures and an area in which a marine spill of hazardous waste could eliminate the oystering and shrimping industry in Mobile Bay for the foreseeable future.

Currently, there are no guidelines or regulations which adequately address these ligitimate concerns. It is our understanding that the Coast Guard will propose new regulations which may address some of these concerns, however, they will not be proposed until March 1986. EPA's scientific advisory board, as well as EPA's consultants, have concluded that the most dangerous part of the ocean incineration process is the loading and transportation to the burn site. Without addressing this critical part of the ocean incineration process before allowing even research burns seems to be reckless on the part of federal agencies and certainly not in the best interest of the citizens of Alabama.

A measure of the concern of Alabamians related to the use of Chickasaw or Mobile as a port facility and for the ocean incineration program in general is the fact that approximately 800 people attended the EPA May 2, 1985, hearing in Mobile, and approximately 1000 Alabama residents have signed petitions supporting the Boxer Amendment. Copies of those petitions are attached to this statement for inclusion in the record.

I appreciate the opportunity to present these remarks.

Senator **BENTSEN**. Our next panel will be Sue Ann Fruge who is coordinator of the Gulf Coast Coalition for Public Health in Harlingen, TX; Ms. Sharron Stewart, coastal resources chairman of the Texas Environmental Coalition, Lake Jackson, TX; Mr. Kenneth S. Kamlet, director of Pollution and Toxic Substances Division, National Wildlife Federation; Sally Lentz for the Oceanic Society of the Ocean Policy Office; and D.W. Bennett, executive director of the American Littoral Society from Highland, NJ.

I must ask that you limit your testimony to 5 minutes maximum and then we will have to again resort to written questions because of the substantial number of witnesses that wanted to be heard today.

Ms. Fruge, if you would proceed, please. Good to have you back. Nice to see you.

STATEMENT OF SUE ANN FRUGE, COORDINATOR, GULF COAST COALITION FOR PUBLIC HEALTH

Ms. **FRUGE**. Thank you. I also have with me Jackie Lockett, who will assist me in any questioning you might have.

My name is Sue Ann Fruge, representing the Gulf Coast Coalition for Public Health, a broad-based, grassroots organization located in the Rio Grande Valley of Texas.

Two years ago I would have naively testified about the problems existing with the technology. These are found in my written testimony.

I also would have ardently pointed out some of the glaring problems with the proposed regulations, also noted in my written testimony.

That might have been the extent of my comments, then, not today. Many of us have come to the conclusion that technology, science, nor regulations have anything to do with the headlong rush toward ocean incineration. The decision to do so is quite simply politics.

This fact, frequently suspected, was confirmed for us recently when Dr. Tudor Davies, EPA hearing officer for proposed regulations, met with local elected officials and citizens in Brownsville, TX. When asked whether science or hearing attendance numbers would affect the decision on ocean incineration, he stated, "It will be a political decision." And he confirmed that remark later in Washington.

What the coalition and many others perceive as the real issue at hand is the apparent ability of a large and powerful company, Waste Management, Inc., and the Maritime Administration to grease the skids to an extent that ocean incineration will be permitted even in the absence of adequate scientific data, and over the objections of scientists, State governments, impacted citizens and affected economic interests.

Why the push from Chemical Waste Management? Profit. To some observers, the headlong rush began in 1980 when they purchased an incinerator ship out of bankruptcy and awakened to the realization that the European market would soon be drying up with the anticipation of the Oslo Convention's intent to terminate ocean incineration.

Waste Management, of which Chemical Waste Management is a subsidiary, is the world's largest waste disposal corporation. Impressive, second only to its ability to make phenomenal profit, it seems, is its inability to stay within the laws of these United States.

According to the Wall Street Journal, the EPA has determined more than 100 civil and several possible criminal violations. It was when we began to study the handling of these violations that we also began to question the relationship that existed between this company and the U.S. Environmental Protection Agency.

In December 1981, Chemical Waste conducted the first research burn of PCB's in the Gulf of Mexico. The testing equipment malfunctioned and little data was available, yet the test was deemed a success by the EPA.

It was on that burn that dioxin, a chemical inappropriate for ocean incineration, was burned aboard the *Vulcanus*. Changes were made in the permit after the public notification period expired. EPA officials involved could not explain who made this liberating change or when or why it was made. Chemical Waste made from $10 to $25 million for this and the subsequent test burn.

The State of Alabama felt strongly enough about that that they are conducting their own criminal investigation. And I might add, as of yesterday, the vice president of the southeast region of Chemical Waste Management, plus the site manager at the Alabama site, have pleaded the fifth amendment.

The second test burn was monitored by the EPA, and because the company was not charged for the expense, taxpayers footed the bill, estimated at $250,000 to $300,000. According to sources, "The EPA allowed CWM carte blanche in writing its own permits."

These test results, the bulk of scientific data available on U.S. ocean burns, were assessed for the EPA by TRW, Inc., while the company was simultaneously contracted to Chemical Waste Management.

Mr. James W. Sanderson, adviser to Anne Gorsuch, was the recipient of payroll checks from CWM and EPA simultaneously for several months. Mr. Sanderson attempted to influence decisions on the issuance of permanent permits to Chemical Waste.

Although investigated by the Justice Department for conflict of interest, the charges were dropped for insufficient evidence.

Interestingly, Ms. Saundra Brown Armstrong, Justice Department attorney handling this case, was elevated to the position of Commissioner of the Consumer Product Safety Commission soon after.

In March 1983, the State of Alabama filed suit against the EPA for attempting to expeditiously permit the construction of PCB storage tanks below the 100 year flood plain, clearly prohibited by EPA. The suit centered around a memo from Rita Levelle suggesting the exercise of enforcement discretion by region IV in that matter. The tanks were to be used for loading the Vulcanus ships.

In March 1984, Mr. Steven Shatzow, EPA officer, issued a recommendation for the issuance of operational permits to Chemical Waste Management that a research burn of over 3 million gallons of PCB's be executed. That amount corresponded with the volume of PCB's the company had illegally stored in Emelle, AL.

A regulation development workshop was held in June 1984. Representatives from the attorney generals' offices of three States and numerous environmental groups were invited to provide input. Prior to the meeting, a fully developed set of regulations leaked to the opposition participants. When the EPA officials were confronted with the document, they denied any knowledge of its existence.

During the rather emotional revelation, a member of industry leaped to his feet and was overheard exclaiming, "That's a privileged document. Only industry is supposed to have it."

The questionable circumstances surrounding the Maritime Administration's $55 million loan guarantee are covered in the written testimony. A recent verbal guarantee of another $13.6 million infusion, plus the deletion of a requirement that the ships conform with EPA regulations, has reinforced public skepticism.

Senator **Bentsen**. Ms. Fruge, I will have to ask you to summarize now.

Ms. **Fruge**. All right.

After 3 years of observing the absolute refusal or inability of EPA to respond to many valid concerns raised by State governments and coastal residents, we felt compelled to address the key issue—the politics.

We appeal to you to first move this technology above reproach by supporting Senate bill 1039. The 3-year moratorium for research will remove the issue from the arena of favoritism.

Second, we implore you to conduct a penetrating investigation into the proliferating irregularities surrounding this quick fix technology. Without it, public acceptance is virtually nil.

At this time I would like to present to you petitions with 19,500 signatures opposing ocean incineration—6,900 from Texas, 1,000 from Alabama, and 2,500 from the Lake Charles Environmental Cleanup supporting the moratorium legislation—all representing the massive degree of concern felt by coastal residents.[1]

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[1] The petitions referred to have been retained in committee files.

Senator **Bentsen**. Thank you, Ms. Fruge. We are pleased to have your petitions and your testimony, which we will take in its entirety. We appreciate your continued concern on this very important issue, and particularly the fact you are up here from my hometown area.

Ms. **Fruge**. Thank you.

Senator **Bentsen**. Sharron Stewart, we are very pleased to have you here from Lake Jackson. We are pleased to see you again. Won't you please testify.

STATEMENT OF SHARON STEWART, COASTAL RESOURCES CHAIRMAN, TEXAS ENVIRONMENTAL COALITION

Ms. **Stewart**. Thank you, Senator.

We have expressed our concerns since 1974 about the risks of ocean incineration. If land-based incinerator proponent, Edward Kleppinger, is correct in his estimation that:

> Catastrophic occurrences to the Vulcanus cannot be disregarded. If the Vulcanus ever had to dump a cargo of only 500,000 gallons of PCB waste, about 5 million pounds of liquid waste would be released, amounting to 2.5 million pounds of PCB's. The quantity would be sufficient to pollute a circle of a radius of 200 miles to a depth of over 4,500 feet. Dumping liquid PCB waste of the quantity suggested would be sufficient to deteriorate all life in the Gulf of Mexico.

Then we are indeed facing a serious problem.

Along with looking at the actual need for ocean incineration, we must look at the impact of the technology as proposed, as it affects the use and development of other waste removal and destruction methods. What happens to the economic incentives for developing waste reduction, reuse, stabilization, and high efficiency destruction technologies?

We fear that by providing the cheap quick fix to the problem of waste disposal, as in the Environmental Protection Agency proposed regulations, the process by which we develop a proper waste management strategy will be skewed and, ultimately, far greater environmental harm will occur.

We also endorse the Boxer-Cranston legislation. Our strongest concern is the inclusion of the operating history of the applicant in this or any other business. Past compliance history is an indicator of how one can be expected to perform in the future. Such a provision is intended to be discriminatory, in order to offer protection to living resources.

If Texas can recognize the need for such a provision, surely EPA can.

In addition, we find it incomprehensible that EPA would eliminate the hearing examiner's report and the adjudicatory proceeding at a point where it would benefit the public and keep it in for permit modification, where it would benefit the company.

Liability is a serious issue. Complete indemnity from a single catastrophic event or from any potential discharge must be provided. That compensation, both in amount and mechanism for distribution, must be clarified for both land and ocean based waste management activities. Those parties most directly affected—commercial and sports fishermen, related shoreside support, and tourist industries—should be able to recover full compensation. This may mean that in order to get any kind of permit, the vessel owner/

operator will voluntarily have to give up his right to the protection of the 1851 Limitation of Shipowner's Liability Act.

The research plan seems to encompass only one kind of vessel and only one kind of incinerator technology. Like the regulations, the research plan gives credence to the feeling that a special relationship exists with one applicant and EPA.

Once these proposed regulations are final, operating permits can be issued without having in our estimation adequately addressed the needs determination, the background research on the site, or the critical research yet to be done on the surface microlayer. We are also concerned that EPA's definition of initial mixing will allow them to ignore the immediate reaction when the plume hits critical surface area of the ocean.

We do not find 10-year permits acceptable and suggest they go back to the 3-year permits.

Concerning the gulf site, our first concern is the attempt by EPA to grandfather the site by publishing the site description and the coordinates along with the statement that use of the site may be up to 10 years in the Federal Register is an attempt to keep the public from being allowed to follow the procedure properly.

If one looked for a worse site designation for ocean incineration than the Gulf, it could be found. You could do it in the Great Lakes.

In 1974, the site selection was based on the proximity to a large percentage of chemical waste producers. It was generally accepted that there were not any living resources of any value off the Continental Shelf. Traffic patterns for vessel transportation were not considered important. No lightering occurred in the Gulf of Mexico. The occurrence of oil and gas rigs were minimal and predominantly only in shallow water.

In 1985, the world has changed. Oil rigs are becoming common sites in depths of 1,000 to 1,700 feet. Oil tankers traverse the gulf from 50 to 100 miles offshore, transferring cargo to smaller vessels. Vessel congestion for oil and chemical products is the heaviest in the world.

The burn zone once considered an ocean wasteland now supports a major commercial fishery for black fin and yellow fin tuna. It is a breeding ground for the giant blue fin tuna, which is caught all the way to Newfoundland.

Under the MFCMA, we now prohibit the Japanese from the taking of broad-billed swordfish in the Western Gulf because it is the only known area where small juveniles are found. Kingfish, snapper, menhaden, grouper, and tile fish are all sought after commercially in the area.

Senator **Bentsen**. I must ask you to summarize now.

Ms. **Stewart**. All right.

In other words, there is a changed condition. We have a complete, highly developed fishery in the burn zone that was not known in 1974.

If this is EPA's idea of the best gulf site, then it appears that no gulf site is appropriate. The public in the past has accepted a tremendous amount of environmental risks. We now have a greater knowledge of the consequences of accepting those risks. The regulations as proposed do not reflect an effort to minimize those risks.

Senator BENTSEN. Thank you, Ms. Stewart. We will take your statement in its entirety. Your time has expired. It is obvious you spent a great deal of time on this and effort on this. Your concerns are the concerns of all of us. We are appreciative of the comments you made.

Ms. STEWART. Thank you, Senator.

Senator BENTSEN. Mr. Kamlet, we are pleased to have you here. If you would proceed.

STATEMENT OF KENNETH S. KAMLET, DIRECTOR, POLLUTION AND TOXIC SUBSTANCES DIVISION, NATIONAL WILDLIFE FEDERATION

Mr. KAMLET. Thank you, Mr. Chairman.

I am Kenneth S. Kamlet, here on behalf of the National Wildlife Federation. We have been close observers and active participants in the events beginning in 1974 which have brought us to the threshold of commercial-scale incineration at sea. It is our carefully considered opinion that ocean incineration can be carried out safely and effectively, when appropriately regulated, and that, at the present time, it is not only a tolerable option but, along with land-based incineration, a preferred one.

There is no inconsistency between our staunch defense of waste destruction ocean incineration and our equally outspoken and long-standing opposition to the direct ocean dumping of harmful wastes.

I will now address the four issues identified in the body of the subcommittee's invitation letter. We will submit for the record in the next few days, with the chair's permission, our responses to the much more numerous questions posed in the four-page attachment to the subcommittee's letter.

First, do EPA's proposed regulations provide appropriate public health and environmental safeguards? In general, we believe they do. Indeed, we believe these safeguards equal or exceed those of any other EPA program. And although we have identified a number of problem areas, we think most of these can be readily corrected in the final regulations.

There may, however, be four or five issues which could ultimately require legislative attention.

These relate, for example, to the current inability to systematically designate suitable and unsuitable incineration loading ports, on the basis of such critical considerations as the adequacy of a port's waste handling and loading facilities, and the productivity and sensitivity of estuarine areas which must be traversed by incinerator ships en route to the burn site from a given port.

Another such issue may relate to EPA's seeming inability or unwillingness to place a cap on the maximum number of burns allowable within a given geographically circumscribed ocean area, such as the Gulf of Mexico.

It may also be necessary to mandate an updating and upgrading of the Coast Guard's spill prevention and materials handling and safety regulations to respond more directly to the unique problems presented by hazardous chemicals.

And, finally, there is the question of whether EPA has the right to impose any liability coverage or financial assurance requirements without the grant of explicit statutory authority to do so.

The second issue posed in the invitation letter regards the efficacy of ocean incineration technology in relation to other existing and emerging waste destruction techniques. We can say categorically that ocean incineration is far better than disposal-oriented methods which do nothing to lessen a waste's hazard potential but which are the dominant means used today in the United States to deal with hazardous wastes. I think it can also fairly be said that ocean incineration is neither universally better nor universally worse than waste destruction in suitable land-based incinerators. They each have their pros and cons.

Newer and better destruction technologies may well be on the way. When they arrive, incineration could well and properly be deemed obsolete, but they are not here yet or very close at hand, and we can't afford to sit back and wait. Incineration isn't perfect, but it is safe and effective and it is the best method we have right now for getting rid of dangerous organic wastes.

The third issue we were asked to address is what effect will adopting large-scale commercial incineration have on efforts to promote waste minimization. We think that as legal and political pressure builds to force waste generators out of cheap land disposal and into more expensive incineration technologies, the incentives to reduce the generation of wastes requiring costly treatment will increase rather than decrease. Cutting off all waste management options at once isn't the answer. Such an approach is far more likely to promote illegal or inappropriate dumping than it is to stimulate waste minimization.

Finally, the subcommittee asked why we were more willing than others to place confidence in ocean incineration. Speaking only for ourselves, the answer is that we have long since recognized that something must be done with the growing tide of hazardous wastes which threatens to inundate us. Destroying such wastes by incineration seems to us the best available means to minimize the risks they pose to the environment as a whole.

While the threat, however remote, of a catastrophic marine spill is a sobering one, it is a threat rendered less terrifying when put in the context of the vastly greater volumes of dangerous chemical cargoes that are transported continuously and generally uneventfully through our inland and coastal waters.

Nor do we agree that ocean incineration should be halted until more research has been done. We know enough to know that it works and that it is safe. We could no more support a more-research, no-action posture toward ocean incineration than we could or would support the administration's misguided efforts to avoid decisive action to control acid rain by invoking the alleged need for more research.

Ocean incineration is an idea whose time has come and one which can help solve one of our country's most troublesome environmental problems. Let's make it as safe as possible. But let's not debate it, condemn it, research it, and prohibit it to death.

Thank you.

Senator **Bentsen**. Thank you for your testimony.

We are very pleased to have Sally Lentz, who is a staff attorney for the Oceanic Society. If you would proceed.

STATEMENT OF SALLY ANN LENTZ, STAFF ATTORNEY, OCEAN POLICY OFFICE, THE OCEANIC SOCIETY

Ms. **Lentz**. Thank you.

I am Sally Ann Lentz, staff attorney with the Oceanic Society's Ocean Policy Office in Washington, DC. The society is a national nonprofit organization devoted to protection, conservation and wise use of marine and coastal resources.

In cooperation with 15 environmental and citizen organizations, the Oceanic Society prepared a briefing report on EPA's draft incineration regulations. We intend to submit coalition comments to EPA by its June 28 deadline. Since those comments will contain detailed analyses on many of the issues raised in your letter of invitation, I ask permission to submit a copy to the subcommittee for inclusion in this hearing record.[1]

Senator **Bentsen**. That will be done.

Ms. **Lentz**. Thank you.

Incineration at sea has never been treated as a panacea for dealing with hazardous waste. When first adopted in Europe, it was a progressive technology, preferable to direct ocean dumping, which was then customary. Yet, then, as now, it was recognized in Europe only as an interim measure pending development of better waste management techniques.

Indeed, under the Oslo Convention, Europeans hope to phase out the use of ocean incineration in the North Sea by the year 1990. The Netherlands and West Germany expect sharp decreases in amounts of waste incinerated at sea because of significant strides in reduction and recovery techniques. The European experience supports our view that many liquid wastes slated for incineration at sea are the most appropriate wastes for recovery and reuse.

The Oceanic Society does not categorically oppose ocean incineration, but we believe EPA's issuance of draft regulations is premature in light of existing uncertainties about incineration technology and the effects of emissions on the marine environment.

Also, the draft regulations do not adequately address a number of important legal and technical concerns. While my written testimony addresses our concerns in detail, I wish to highlight some of the issues that must be resolved before final regulations are issued.

Both the London Dumping Convention and the United States Ocean Dumping Act require a determination of need for dumping. Currently a permit for ocean dumping in the United States will be issued only upon demonstration that no improvements can be made in process technology to reduce adverse impacts and that there are no practicable alternative locations and methods of disposal or recycling.

Existing regulations reflect the spirit in which the Ocean Dumping Act was enacted. The intent is to ensure that the use of ocean dumping will not impede the development of better solutions to hazardous waste management. This goal is achieved by strictly limiting dumping when environmentally acceptable methods for reduction, treatment, and disposal are available on land. This same spirit is reflected in the needs determination required under the London Dumping Convention.

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[1] The document referred to has been received and is retained in committee files.

In direct contrast, EPA's proposal of a generic assessment establishing a rebuttable presumption of need will encourage generators to seek off-site disposal of wastes rather than providing incentives for commercial expansion of source reduction, recycling, and reuse.

Other legal issues include EPA's failure to prepare an environmental impact statement, additional inconsistencies with LDC requirements, and failure to adequately address varying roles and responsibilities of other Federal agencies and other applicable laws.

Contrary to claims by industry, incineration at sea is ocean dumping, both legally and effectively. While most of the waste is destroyed, the remainder is dumped in the environment. It is the uncontrolled release of this remainder that concerns us because we know so little about its content and effects.

What we do know, however, is disturbing. Some scientists suggest that compounds formed in the combustion process and released through the stack emissions may be more toxic than their precursor compounds and may not be detected by existing testing techniques.

In ocean incinerators, all metals contained in the waste stream will be released into the environment, as opposed to land-based incinerators where metals are captured in the scrubber effluent for disposal under controlled conditions.

Some believe the greatest impact from incinerator emissions is on the microlayer, or surface skin, of the ocean which supports a wide variety of plant and animal life, including embryonic forms of commercially important species. Scientists admit there is still much to learn about the role of the microlayer, but current knowledge indicates that it may represent a fundamental link in the marine ecosystem. These uncertainties demand additional research and vigorous monitoring programs.

In addition to these legal, technical, concerns, the Oceanic Society is disturbed by special problems of enforcement associated with incineration at sea and the serious threat posed by accidental spills at sea, which the Coast Guard and EPA have acknowledged are difficult, if not impossible, to clean up. These and other issues are addressed more fully in my written statement.

Senator **Bentsen**. If you would summarize your statement now.

Ms. **Lentz**. In sum, EPA is eagerly promoting ocean incineration in the face of overwhelming scientific uncertainty and has yet to resolve numerous legal, technical, and other issues associated with the program. Under these circumstances, EPA's actions are premature and the Oceanic Society cannot support this program.

Senator **Bentsen**. Thank you very much.

Mr. Bennett, if you would proceed, please.

STATEMENT OF D.W. BENNETT, EXECUTIVE DIRECTOR, AMERICAN LITTORAL SOCIETY

Mr. **Bennett**. Yes; my name is Deryl Bennett. I speak today on behalf of Clean Ocean Action, which is a New Jersey-based coalition of environmental, commercial, and recreational fishing businesses, real estate, women's professional groups, representing about 100,000 people centered in northern New Jersey with a particular interest in the marine environment offshore and ocean cleanliness and with a real concern about ocean incineration because New Jersey is appealing as a place for a test burn this summer, as a site designation, and Newark is being looked at along with Perth Amboy as loading areas.

We testified at the hearings at Monmouth College in April and rather than go through that testimony again, I would like to submit this written document and then mention a couple of others submitted there also and emphasize, as an earlier speaker did, that the need for this for New Jersey has not been established. This was addressed by Donald Dieasio of the New Jersey Division of Environmental Quality at the hearing at Monmouth College.

I would also mention and submit the testimony of Peter Montague, coeditor of "New Jersey Hazardous Waste News," which is critical of the companies most actively seeking permits to burn hazardous materials at sea. And to coin a phrase that was used to describe a small Texas attorney from Tyler, it is our impression that these people who want to burn wastes at sea are high-pressure operators who can talk the peel off a banana.

We think they have done such with EPA. We don't think EPA can handle these ocean burns. We would emphasize to the Senate committee to look very carefully at that relationship.

Let me try to summarize the concerns from a New Jersey perspective. First, incineration of toxics is a legitimate alternative for destruction of some toxics. Incineration at sea seems attractive, but for all the wrong reasons. It is out of the jurisdiction of local and State governments, which makes it attractive because it is regulated by one agency, but it does also free up those other jurisdictions from having any say, having any concern.

It is a big operation, and big operations always look good, but they seldom work. It takes the pressure off efforts to reduce production of toxic wastes and instead passes toxics down the line to somewhere else. And the somewhere else always appears to end up in the ocean, like sewer sludge and dredge spoils.

We don't believe the need has been established. We don't think the ocean is as safe as land for incineration. We are aware that there is a concern about spilling and damage and collision at sea and spilling of this material on the way to a dump site. Yet, we are told that there are lots of other hazardous substances being carted around offshore that are not spilled.

There is a major difference, and that is the other hazardous materials that are being transported are for sale. They are valuable. This stuff is to get rid of, so that there is nothing to prevent them from spilling it as a benefit on their way out to a site. That is a major difference. Therefore, we think that comparison doesn't work.

Our conclusion is that what is being proposed is not a safe technology. If a technology can be developed to burn toxics safely, it should be done on land.

Thank you, Senator.

Senator **Bentsen**. Thank you very much, Mr. Bennett.

One of the frustrations of chairing one of these hearings is you would like to expand with each and every witness on some of the things they have said which has developed concerns on the issues. Unfortunately, time doesn't permit us to do that. But I will be asking questions of you which I would appreciate your answering for the record, and we will take each of your statements in their entirety. Thank you very much.

Our next panel is Mr. Howard Canter, president of governmental affairs of At-Sea Incineration, Elizabeth, NJ; Mr. William H. Martin, director of technology, Unison, Columbus, OH; Dr. William Brown, director, marine affairs, Waste Management, Inc., Washington, DC; Mr. Jerry D. Neel, senior vice president for operations, Rollins Environmental Services, Inc., Wilmington, DE; and Mr. Vincent G. Grey, president, SeaBurn, Inc., Stolt-Neilson, Greenwich, CT.

Gentlemen, you have been subjected to a number of charges this morning. Now you are going to have your opportunity to answer from your point of view.

Mr. Canter, if you would proceed. You will have to limit your remarks to 5 minutes. We will take your statements in their entirety for the record.

STATEMENT OF HOWARD CANTER, PRESIDENT, GOVERNMENTAL AFFAIRS, AT-SEA INCINERATION, ELIZABETH, NJ

Mr. CANTER. Good morning, Mr. Chairman and members of the subcommittee. I am Howard R. Canter, chairman and president of At-Sea Incineration, Inc. I was supposed to have accompanying me Mr. Lawrence J. O'Brien, our general counsel, who has some expertise on the question of shipowner's liability. Unfortunately, he is sick, so if there are questions about that, we could reply in writing at a later time.

It has become increasingly evident that many land disposal methods generally do not provide a satisfactory solution to this Nation's hazardous waste disposal problems. Land emplacement options, such as landfills, surface impoundments and injection wells are really forms of long-term storage. Highly toxic liquid wastes stored in some landfills have shown a dangerous tendency for finding their way into ground water systems and bodies of water.

There have been a number of cases in my own State. The case of Jackson Township landfill is one of the examples. Pollution incidents such as these are graphic examples of the major risks to human health and the environment that result from improper disposal methods.

In response to these concerns, you and your congressional colleagues, EPA, and some State agencies, have placed stricter controls on land emplacement. Last fall Congress enacted the 1984 RCRA amendments. In this legislation, Congress declared essentially a national policy to avoid substantial risk to human health and the environment, reliance on land disposal should be minimized or eliminated, and land disposal, particularly landfill and surface impoundments, should be the least favored method for managing hazardous wastes.

Thus, the will of Congress, representing the people of the United States, has been stated.

At a congressional hearing on December 7, 1983, Mr. Jack Ravan, the Assistant EPA Administrator for Water, committed to the development of revised and expanded U.S. regulations within 1 year. It is now 18 months later and the regulations have been published in draft form for public comment and will probably not be promulgated until the end of this year. Yet, I hear that the EPA is being accused of proceeding too rapidly.

Simultaneously, the agency embarked on a comprehensive program to reevaluate ocean incineration. First, their Science Advisory Board studied the use of incineration as a hazardous waste disposal technology and concluded that no human health or environmental impact from either land-based or ocean incineration has been detected.

It is important to recognize that the SAB report also concluded that while additional study of incineration should be undertaken, the technology should continue to be utilized. Basically what the SAB said was the entire world does not know very much about what goes on inside a flame and that we ought to learn more about that, but they had not seen any significant impact on human health.

Second, the EPA's Office of Policy, Planning and Evaluation confirmed a 1979 comparison of land and ocean incineration and found that ocean incineration is less risky to human health. The study also showed that if the amendments to RCRA are properly implemented—and how can the EPA say they are not going to implement the will of Congress—the shortfall in commercial incineration capacity is estimated at seven and a half times the existing capacity.

The EPA has now developed its proposed ocean incineration regulations. This rulemaking, which began in May 1984, was one of the most comprehensive activities that I have ever seen. Fifteen months later, after Mr. Ravan made his commitment, the proposal was presented for public comment, and as I said, it will most likely be promulgated by the end of this year.

In 1982, the critics of ocean incineration demanded that EPA develop these regulations. Now the same critics are saying that the EPA shouldn't develop the regulations.

What else has happened since then? We have produced another 350 to 400 million metric tons of hazardous waste, and we have added hundreds of sites to the national priority list for cleanup.

How much longer can we fool the public into believing that strides are being made to protect their water supplies, their environment, their health, and the health of our children? We have seen the results of improper hazardous waste management practices. Have we learned nothing from Love Canal and Times Beach?

Concerns have been expressed about the potential of a catastrophic accident befalling an ocean incinerator ship. There is, of course, that possibility. But because of the safety and navigation systems incorporated into the modern incineration ships, this possibility is exceedingly remote.

Hazardous waste is hazardous because of the material from which it is made. Much of this material is transported out of our ports every day. I will not go into the details, but the Houston ship channel was mentioned, and 60 million metric tons of this material was hauled in and out of the Houston ship channel in 1982. By comparison, one of our incinerator ships, if it worked full time, at its absolute maximum capacity, could handle 100 to 120,000 tons in a year.

There is also a body of maritime laws and historical experience regarding liability in the event of an accident. There seems to be a great deal of confusion about this, and as I stated, I would like to submit additional written comment on that by our staff attorney.

Senator **Bentsen**. That will be accepted.

Mr. **Canter**. I am confident that ocean incineration is an appropriate technology for destroying liquid organic hazardous wastes.

Senator **Bentsen**. Would you summarize, please.

Mr. **Canter**. All right.

Mr. Chairman, we already know the risks of inappropriate disposal methods. In my own State of New Jersey, there is a pond containing 3 million gallons of PCB contaminated oil. There was a picture of it in the National Geographic magazine last March. I don't want any more of this. I don't want to drink it. I don't want to smell it. I don't want to eat it. I think we should get on with this technology which for 16 years has proven to be effective and safe. Thank you.

Senator **Bentsen**. Mr. Canter, thank you for your testimony.

Mr. Martin, if you would proceed.

STATEMENT OF WILLAM H. MARTIN, DIRECTOR OF TECHNOLOGY, UNISON

Mr. **Martin**. Good morning. My name is William H. Martin. I am director of technology for Unison.

I am pleased to appear here this morning to summarize the technology developed by Union Carbide Corp. and offered through Unison to remove PCB's from electrical transformers. I am submitting written materials for the record describing the transformer service.[1] In my oral comments I would like to highlight briefly those aspects of the process most pertinent to this subcommittee's exploration of alternative waste destruction methods.

The legacy of landfills throughout this Nation and the hazards they pose has led Congress, EPA and numerous scientific groups to urge that alternative disposal methods be developed and implemented as rapidly as possible. The RCRA 1984 amendments, for example, call for an end to all landfilling of PCBs by July 1988 unless EPA rules to the contrary.

Less attention, however, has been focused to date on the disposal problem specifically addressed by the Unison PCB transformer retrofill method, namely the collection of hazardous materials such as PCBs in a manner that makes them available for disposal by other more permanent means.

As I shall describe, the Unison retrofill method is designed to remove and destroy PCB's from electrical transformers. The result is a safer, non-PCB operating transformer, which when much later at the end of its useful life is removed from service for disposal, contains virtually no PCB's in the transformer carcass. Without such technologies, considerable quantities of hazardous materials may still find their way to landfills via transformer carcasses and thus lead to continuing long-term PCB releases to the environment.

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[1] The materials referred to have been received and are retained in committee files.

We should not let PCB's leaching from landfilled transformers become the environmental crisis of the next decade. Union Carbide's technology solves the dual issues of asset rejuvenation and permanent toxic waste disposal.

In 1976, as part of the Toxic Substances and Control Act, Congress banned not only future manufacture but also continued use of PCB's. Among the types of electrical equipment containing and using PCB's are electrical transformers. EPA estimates that about 140,000 such transformers, each containing several hundred gallons of fluid with 40 to 100 percent PCB's. The average transformer is a 2,000 pound, or 1 ton, PCB risk.

EPA has authorized continued use of PCB's in electrical transformers as long as numerous regulatory controls have created a strong incentive for transformer owners to eliminate their PCB problems altogether.

PCB transformer owners have two basic alternatives if they wish to eliminate their PCB risks. One they can replace the PCB transformer with a new, non-PCB unit, or two, they can drain liquid PCB's from the transformer, servicing to remove absorbed PCB's, and refilling with a non-PCB coolant. This is called retrofilling. Retrofill servicing of PCB transformers to reduce PCB concentrations, thus reclassifying to non-PCB status, is specifically authorized by EPA.

Replacing a transformer with a new unit provides the owner with new non-PCB equipment, but does not lead to destruction and elimination of all PCB's. After the old transformer is drained and its surfaces rinsed, the carcass is typically landfilled intact in accordance with EPA regulations. Such carcasses still contain 20 to 100 pounds of PCB's in their internal workings. Surface flushing will not and cannot remove the residual PCB's held within the porous container of the transformer.

Therefore, while PCB transformers are being phased out, substantial quantities of hazardous liquid waste are being put into landfills with consequent potential for migration. Thus, after all the effort and expense to replace, the PCB problem is not eliminated; it has just moved from above ground to below ground where it is much more difficult and expensive to monitor and ultimately correct.

The experience of the past decade suggests that knowhow for dealing with toxic wastes in landfill is in short supply. Regardless of the liners or leachate collection system, no landfill can be considered secure forever. Even new state-of-the-art landfills legislated by Superfund are far from secure forever.

Of the sites looked at carefully, all are leaking or appear to be leaking in the opinion of the EPA hydrogist who conducted the first site inspections.

Senator **Bentsen**. Your time has expired. If you could summarize, please.

Mr. **Martin**. To summarize, the RECLASS-50 process is now being offered throughout the United States by Unison. Achievement of non-PCB classification is accomplished at the transformer site in a timely, cost-effective manner, thereby permitting continued use of the transformers. Most importantly, from the standpoint of hazardous waste disposal, this technique removes nearly all PCB's from the transformers so that they can be destroyed. Unlike transformer carcasses that have been merely drained and rinsed before burial in an underground cell, these retrofilled transformers will contain no more than trace quantities of PCB's and thus will not pose the long-term potential for PCB migration into the environment.

Thank you.

Senator **Bentsen**. This is a chemical degradation process? It is proprietary?

Mr. **Martin**. This is a process by which you can extract liquid waste from previously thought to be solid materials and concentrate those wastes into liquid form so they can be suitably permanently destroyed by facilities such as high-temperature destruction or chemical methods.

Senator **Bentsen**. I will certainly be addressing some questions to you on it. I want to know more about it.

Mr. **Martin**. Thank you.

Senator **Bentsen**. Dr. Brown, if you would proceed, please.

STATEMENT OF WILLIAM BROWN, DIRECTOR, MARINE AFFAIRS, WASTE MANAGEMENT, INC.

Mr. **Brown**. Thank you, Senator Bentsen.

My name is Bill Brown. I am director of Marine Affairs of Waste Management, Inc. I am a marine biologist and lawyer. I recently joined Waste Management after 3½ years with the environmental defense fund.

Here with me today is Dr. George Vander Veldé. Dr. Vander Velde is a biophysicist. He is employed by Chemical Waste Management as vice president for technical services and development.

Waste Management owns and operates the *Vulcanus I* and the *Vulcanus II*, ships specially designed to incinerate liquid organic hazardous waste at sea. Waste Management plans to operate the *Vulcanus II* in the United States, leaving the *Vulcanus I* to incinerate waste in Europe and other international markets.

Mr. Chairman, ocean incineration is not ocean dumping. The intensely hot temperatures of incineration break down toxic waste and turn it into nontoxic byproducts. Ocean incineration destroys pollution. It is an alternative to the dumping that used to occur routinely in the gulf and in the Atlantic. Ocean incineration is a way to prevent the cancer that toxic chemicals may cause if they are not destroyed.

EPA research on our vessels between 1974 and 1982 has demonstrated their safety. Using state-of-the-art sampling technology in the most recent testing, EPA and the State of Texas, its air pollution control board, were unable to detect any toxic chemicals from PCB waste in the stack of the ship, not to mention in the air or water or in marine life.

Ocean incineration is an operationally proven state-of-the-art technology. Our vessels have operated routinely in Europe since 1972, destroying wastes in about 400 voyages without a single accident. The vessels are double hulled and they have double bottoms. The waste is carried in eight separate tanks. In the United States, strict Coast Guard requirements apply to loading and movement of the vessels, and, in addition, EPA has proposed to require that a shiprider, an employee of EPA, would be on board the vessels whenever it transports or incinerates hazardous waste—on board at all times.

Concerns have been raised about the risk of spills. Yet EPA estimates that the risk of any accident at sea is no more than once each 1,200 years. In fact, they have estimated that the risk of a catastrophic spill—and they base this on statistics from the bulk chemical trade—is estimated at once each 24,000 years of operation.

It is also important to keep in mind, to put fear of spills in proper perspective, that there is this enormous bulk chemical trade going on. Using EPA statistics, in just 2 hours, more pure hazardous chemicals move through gulf coast ports than would move through these same ports in a year's routine operation of an ocean incineration vessel. That number I gave you doesn't include the petroleum trade. It is based solely on hazardous chemicals.

That trade is virtually all the risk that is posed from chemical spills in the gulf. These ships are safe. But if there is any consideration of liability or waiver of rights under various statutes, the proper policy consideration of Congress should be on concerns of releases of these things from any ship that carries hazardous substances.

Mr. Chairman, our Nation needs ocean-based incineration to meet the enormous, accelerating need for alternatives to landfilling that will permanently eliminate toxic waste and better protect human health and the environment.

The Congress and the EPA have concluded that incineration is one of the environmentally superior alternatives to land disposal of liquid organic hazardous waste. The EPA and the Science Advisory Board of EPA have concluded that incineration, at sea or on land, is a valuable technology and should move forward now. Ocean-based incineration is considered by EPA to be even safer for human health than incineration on land. In fact, incineration on land is occurring right now, including in the Houston metropolitan area.

EPA estimates that demand for commercial incineration of liquid organic hazardous waste will increase to seven and a half times more than current capacity over the next 5 years. This estimate is based principally on the recent amendments to the Resource Conservation and Recovery Act.

I would like to point out that although the New Jersey Hazardous Waste Study is, I think, an excellent document, very thoughtful—I reviewed it last night—as far as I can tell, it did not include projections based on the recent RCRA amendments. Its projections were based on some regulatory changes by EPA, but not the RCRA amendments. In fact, most of EPA's estimate for increase over the next 5 years comes from the RCRA amendments and not from other sources.

EPA has evaluated potential alternative technologies that are now in research stages and has concluded that they will have minimal impact on the market for incineration of liquid hazardous waste and probably will be unavailable for many years. Waste Management is at the forefront of a number of companies investing in those technologies. We think they are important, but we do not expect them to supplant ocean incineration of liquid organic chemical waste, particularly chlorinated wastes.

In sum, Mr. Chairman, enormous amounts of PCB's and other hazardous wastes are now contaminating our air, water and land. That includes the surface microlayer of all of these systems. Just three incineration ships that could be brought into the United States right away would double the existing commercial capacity for incineration of liquid organic hazardous waste. That would dramatically increase the rate at which these chemicals can be removed from our environment forever.

Failure to use existing ocean-based incineration capacity now can only work to augment the huge and rapidly growing reservoir of toxic chemicals on land. These chemicals will most probably leak and most probably be dumped. They will contaminate our ground water, the rivers and the sea. Human health would be threatened and so would the environment.

The greatest risk facing us now is the harm to human health and the environment that is likely if we delay in using this technology. This is the risk that is the foundation of need. We should not bring that kind of harm upon ourselves.

Thank you.

Senator **Bentsen**. Mr. Brown, that is very interesting testimony. Thank you.

Mr. Jerry D. Neel, you may proceed.

STATEMENT OF JERRY D. NEEL, SENIOR VICE PRESIDENT, OPERATIONS, ROLLINS ENVIRONMENTAL SERVICES, INC.

Mr. **Neel**. Thank you, Senator Bentsen. My name is Jerry Neel. I am senior vice president for operations of Rollins Environmental Services, Inc. I have been employed by Rollins for 11 years and all of the time has been spent at our incineration facility at Deer Park, TX, which was the first commercial facility to be permitted by EPA to incinerate PCB's.

Last year I was appointed by Governor White to serve on the Governor's task force for toxic and hazardous wastes. I have extensive experience in the hazardous waste disposal business.

Mr. Chairman, I have prepared and submitted a written statement for your consideration and I do not intend to read that entire statement because of the time.

Senator **Bentsen**. It will be inserted in its entirety in the record.

Mr. **Neel**. Rollins has been involved in the incineration business for more than 16 years. A very critical part of that business is analyzing the hazardous waste market. We routinely gather marketing data from companies throughout the country.

Since the beginning of this year, we have surveyed over 3,000 companies regarding their current and projected needs and practices regarding disposal of hazardous wastes.

We believe that under the Marine Protection Research Sanctuaries Act, and the London Dumping Convention that EPA must determine the availability of land-based alternatives before it issues any permits for ocean incineration.

Based on our market research, we believe that EPA has clearly not demonstrated that a need for ocean incineration exists today or will exist over the next 10 years, which is the proposed life of an ocean incineration permit that would be issued by the Agency.

There is one basic reason for this. In anticipation of passage of the 1984 RCRA amendments, many waste generators realized that alternative methods of disposal of hazardous liquid waste had to be developed and utilized. In short, Congress accomplished more than I think they thought was possible. And I think you should be commended for that.

As the cost of alternative methods of disposal went up, companies began to invest in reduction technologies and recovery systems with a result that the market for off-site disposal of liquid waste is not nearly as great as EPA and many other industry representatives had predicted.

We have found that the market for off-site disposal of liquid waste has more or less stabilized. However, we find that the market for sludges and solid waste has been dramatically increasing. Only special incineration land-based equipment can be used to burn these wastes and that is where our business attention has been and will be focused for the future.

It is ironic that our efforts to dispose of these solid wastes may be frustrated by the scarcity of available liquid wastes which we have traditionally used as fuel in our land-based facilities. Without good liquid waste to supplement in the incineration of the majority of the waste, that is the solids and the sludge waste, fuel must be either purchased or removed from other fuel programs to maintain the high temperatures required for proper combustion. Since Rollins operates three land-based incinerators, we have operating proof that hazardous liquids are scarce. As an example, last month at our New Jersey facility we were required once again to purchase fuel to be able to continue operations of our incinerator, to be able to incinerate the sludges and the solids in our rotary kiln.

Purchasing fuel when adequate waste fuels should be available is a waste of our natural resources and should not be condoned.

We pride ourselves in the fact that in the operation of our incinerators at Rollins we have always strived to burn the waste fuels with other waste, therefore minimizing the amount of fuel that would be purchased or removed from fuel programs.

In summary, Senator, we are convinced that the market does not justify the need for additional liquid based incineration capacity. In view of the risk often associated with ocean incineration, such as air emissions, due to the lack of scrubbing and destruction efficiency, we believe EPA carries a heavy burden of demonstrating such capacity is in fact needed before permits are issued.

I thank you for the opportunity to present my testimony.

Senator **Bentsen**. Thank you very much, Mr. Neel. I appreciate your testimony. It will be helpful to us.

Mr. Vincent G. Grey, president of SeaBurn. Would you testify, sir?

STATEMENT OF VINCENT G. GREY, PRESIDENT, SEABURN, INC.

Mr. **Grey**. Thank you, Senator.

Our approach to ocean incineration is somewhat different from the vessel designs that have been discussed here by Waste Management, Inc. and At-Sea-Incineration, Inc. and commonly referred to by the environmentalist groups when they were presenting their testimony.

I think one of the principal things that I would like to accomplish today in giving testimony is to make everyone aware that there is this second type of vessel. The SeaBurn vessel has as its basic common denominator the use of intermodal tank containers.

In our paper there will be a full, complete description of our approach. But in order to understand the concerns that I will be presenting, some of that method of operation needs to be known.

These tank containers, that is intermodal tank containers—meaning that they can go by road, highway, barge or ship—are dropped off at a generator's plant where they are filled. When they are brought to the marine terminal in the port of debarkation, they are not pumped out; they are not blended; they are kept in that same tank container. They are retained on a chassis, meaning that there is mobility all the time, and that if there is any risk of fire or flood or similar danger arising in the terminal, these containers could be moved easily to a safer location.

The containers are lifted on board a vessel; up to 144 can be accommodated on the vessel. There are several other unique aspects of the system. The ship has horizontal incinerators. Some of the criticisms of ocean incineration that have been leveled previously, involve the projection of the emissions up through vertical incinerator stacks. Our incinerators, being horizontal, direct their exhaust gases across the stern of the vessel, and downward toward the sea.

Additionally, because of the horizontal nature, we can provide sea water scrubbers which remove the heat from the exhaust gases, so that we don't have a plume that goes up into high elevations and gets carried by uncontrolled winds.

The tank containers are built and certified to the U.S. Coast Guard requirements and the International Convention for Safe Containers. All the containers and the piping on the vessel are located above the main deck. That is, there is no cargo tank below deck. Hence, if the ship should go aground or be sunk, there would be no voluminous release of the hazardous waste material into the sea.

You recall there was a vessel that sank in the North Sea last year where some radioactive canisters were removed safely and all of them were accounted for. We maintain that in this tank container approach that we have in our vessel design, these containers too are in a safe position above deck and can be retrieved in the event of a collision or sinking.

Now I would like to respond to some of the specific issues that were raised in the letter of invitation.

The site access is a subject of special concern to us. The EPA Office of Waste has expressed a policy of allowing only "one ship per burn site." Such a policy would severely and unnecessarily restrict the economic viability of ocean incineration because it would require very expensive vessels to sit idly waiting for the burn site to be vacated by some other vessel, thereby driving up the costs of incinerating wastes.

If one incinerator vessel (1) had an extremely low burn rate or (2) if it had constant equipment breakdown, causing the incinerator burns continually to shut down, or (3) if the vessel had a huge waste storage capacity, another ship would have to stand by and wait for an indeterminate time for that first ship to finish up. Therefore, the first ship could monopolize the burn site. We think that that problem should be addressed.

The one ship per burn site policy would also fail to recognize that the use of the site should be influenced by (a) what incinerator technology is being employed on a particular vessel, (b) what is the capacity of the given burn site to buffer the effluents from the incineration—this, of course, involves the ocean currents and the depth of water, and (c) the safety of the vessels as indicated by the IMO classification. Ours is a type I vessel; all others are type II.

Multiple burn sites is a second issue we would hope you would address. Various State officials and public interest associations have complained that they objected to the use of their State as a primary artery for the flow of the Nation's toxic wastes in order to be delivered to the incinerator ships.

Senator **Bentsen**. Mr. Grey, if you would summarize.

Mr. **Grey**. Yes.

Multiple burn sites on each coast should be designated in order to distribute the amount of waste progressing to the coasts from inland sources and yet minimize the overland distances that the waste must travel.

Senator **Bentsen**. Mr. Grey, I must ask you to finish.

Mr. **Grey**. I was just going to say, Mr. Chairman, there are other subjects that we have dealt with in our written statement and I am sure that you will consider those as well.

We would be pleased to have them.

Senator **Bentsen**. Some very tough issues have been raised and some provocative questions. That is one of the reasons we are holding a second hearing in anticipation of that. That is scheduled for July 17. That one will discuss the issues raised here today with several Federal agencies, including the EPA, the Coast Guard, and the Maritime Administration.

Today's record is going to be open to receive additional testimony in order to facilitate the preparation for that particular meeting. I would urge anyone that wishes to submit additional testimony, things you wish you had said, to provide that to the committee prior to June 26.

Thank you very much. I think it has been a most productive hearing this morning. Thank you.

[Whereupon, at 12:10 p.m., the subcommittee was recessed, to reconvene subject to the call of the chair.]

[Statements submitted for the record and responses to additional questions follow:]

TESTIMONY OF
MARK WHITE
GOVERNOR OF TEXAS
TO THE UNITED STATES SENATE
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
IN REGARD TO OCEAN INCINERATION
WASHINGTON, D.C. JUNE 19, 1985

Senator Chafee, Senator Bentsen, Members of the Subcommittee, I appreciate the opportunity to testify before you today on a matter of grave consequence to the people of Texas and the environment. I also respectfully ask that the unanimously adopted resolutions of the National Governors' Association and the Coastal States Organization concerning ocean incineration of hazardous waste be entered in the record. Those two organizations share the concerns that I and many others have raised regarding the safety, liability, and unproven need for ocean incineration, as well as the importance of its proper regulation.

In opening, let me emphasize that this is an issue of growing concern not only to Texas. Neighboring coastal states along the Gulf of Mexico, as well as east- and west-coast states that may be affected by Atlantic and Pacific burn sites, are also concerned.

I must also point out that our objections are not without a true understanding of the nature of risk in general and of this risk in particular. In the larger context of this debate I feel it is important to consider the mindset with which we in Texas approach this issue. It is important to understanding the basis for our objections. And my point is simply this: In Texas we understand, we know the meaning of, and we are willing to accept -- we are even comfortable with -- reasonable levels of risk-taking in the interests of forging greater social, industrial, technological or economic progress. We have done it in the past, throughout our history, and we do it all the time.

There is clear evidence that we accept risk, considering the fact that Texas has supported and encouraged, all along, the development of its offshore oil and gas drilling industry. A certain level of risk surrounds the operation of every single offshore drilling platform in the Gulf of Mexico today. But the tremendous benefits from that development, for Texas and for this nation as a whole, are substantial and outweigh the reasonable risks involved. Moreover, offshore drilling has been developed safely, with minimal danger, through good planning, good leadership, and thankfully, through good fortune. It has developed, without undue danger to human safety and the environment, through cautious and wise decisions on the part of industry and government. And that is all that we would ask from the federal government on the issues we are discussing today.

First, I would like to discuss a general concern about the lack of any logical sequence in the way the Environmental Protection Agency (EPA) has proceeded to handle questions about the viability of ocean incineration as a safe and efficient disposal method.

A research strategy document from the EPA, made final in February of this year, outlines their perception of the research effort necessary to establish conclusive results on the efficiency and safety of ocean incineration. At that time, the EPA Science Advisory Board was still completing its assessment of the overall adequacy of available scientific data on the matter. When their report was released in April, 1985, it indicated the need for substantial additional research on fundamental aspects regarding the impact and effect of ocean incineration.

The EPA Office of Policy, Planning and Evaluation also recognized that existing information was inconclusive. Nevertheless, they issued a report in April that drew the following conclusions: a) that ocean incineration is an "environmentally sound" waste disposal option for liquid hazardous wastes; b) that there is a need for ocean incineration, and; c) that there is "no clear preference" between ocean incineration or land incineration in terms of risks to human health and the environment. Those findings, although currently unsubstantiated, are necessary in order for the EPA to assert compliance with existing international agreements. [The London Dumping Convention.]

Before either of the two April studies were released the EPA had proposed a set of ocean incineration regulations, that, if finalized, would allow the EPA to begin processing incineration permits in the very near future without the benefit of essential research. The EPA apparently assumes that a research strategy alone is sufficient to begin issuing permits, since no plans have been announced indicating how or even when any of the needed research would be undertaken. I submit to you that the technical basis for the regulations is inherently suspect without the benefit of proper and necessary scientific investigations. It is our position that such hasty and premature actions by the EPA are illogical and should not be permitted to go forward unchecked.

Why has the process not followed a logical sequence of events? Is it because of external pressures on the EPA to begin issuing permits to impatient but aggressive and persuasive potential applicants? Is it because the Maritime Administration took a high-risk financial gamble by providing $55 million in loan guarantees for the construction and testing of two incineration ships? What other reasons could there be for the EPA to so abuse logic and reason in this process that is leading the nation toward what should be an informed and rational decision regarding ocean incineration?

Let me simply note here that we in Texas are not unfamiliar with one of the more aggressive potential applicants, Chemical Waste Management, Inc. This is the firm that was the applicant for the proposed EPA ocean incineration permits that were ultimately denied in May, 1984, after some 6,000 other Texans and I strongly objected. We were joined in that case by representatives from other states, who expressed many of the same kinds of objections that we are making here today.

Just last month, Chemical Waste Management was the subject of a tentative settlement in a lawsuit brought by the State of Texas regarding one of their hazardous waste landfill operations. The settlement represents the largest civil penalty ever assessed in an environmental case in Texas. In addition to a $1 million penalty, the company would be required to spend substantial sums in order to assure groundwater protection from contamination at the waste site. The settlement remains tentative, pending the completion of a public review before filing it with the court.

I raise this issue because we, in Texas, are recommending to the EPA that the past performance of the applicant in meeting standards and requirements should be taken into account in the permitting process. Last week, I signed into law a comprehensive new hazardous waste management act for Texas that requires this kind of review at the state level. We feel that not only will this make known poor performers more accountable, but will enhance the reputation of responsible operators.

Precedent Set by Resource Conservation and Recovery Act Amendments of 1984

The proponents of ocean incineration frequently cite as justification, if not endorsement, of ocean disposal technology the RCRA amendments approved last year by your Committee. I believe that does a disservice to the achievements you made in those landmark amendments to the RCRA.

As I read it, what you did in RCRA was to lodge the burden of proof with the EPA in determining the safety and appropriateness of hazardous waste disposal methods. For the first time ever, the EPA must, within a time certain, demonstrate the safety of hazardous waste disposal in landfills, surface impoundments and injection wells. Otherwise it is automatically banned. I applaud that decision to relieve individual citizens, landowners, and state and local governments from the burden of having to prove that a disposal method is not safe, and to guarantee that it will not be permitted unless EPA proves that it is. And that is exactly the perspective I would ask you to consider today in my deeply felt reservations about the EPA's approach to ocean incineration.

Have they proven that an accident at sea involving an ocean incineration vessel can be cleaned up? Can they prove that the effects would not be irreversible? Has the EPA proven that there would be sufficient liability protection to cover the full impact of an accident at sea? Has the EPA proven that the bioaccumulation from even normal operation of incineration vessels is acceptable? And, is it certain that the Gulf of Mexico is the most appropriate place to pursue this program?

These are the some of the questions that must be answered to our satisfaction and to the public's before this technology should be allowed to go forward. The burden of proof is clearly on the EPA to assure protection of human health and the environment in advance of any permits. I reject the rationale that the impending disposal bans in the RCRA are a valid argument to justify a headlong rush into ocean incineration. They should be cited in the spirit of their intent, as a new standard requiring that safety must be demonstrated up front in every case.

In Texas, we view waste re-use and reclamation, as well as ultimate destruction, at the top of the hierarchy of preferred management and disposal methods. Our own new waste management act contains language to that effect. Through RCRA delegation, however, we also fully subscribe to the principle that the safety of disposal and management technologies and methods should be well-determined prior to their use.

EPA Proposed Regulations

The remainder of my testimony will concentrate on the proposed

EPA regulations for ocean incineration, as they embody the philosophy and policies espoused by the EPA throughout this regulatory process. I believe there are several critical issues that have not been adequately addressed by the EPA in its proposed regulations. These include:

1. A lack of sufficient liability assurances;
2. Failure to demonstrate a need for ocean burning, as required by law;
3. An absence of prudent and essential research;
4. Inadequate technical verification standards, and;
5. Flaws and inconsistencies in the permitting process.

Liability

With respect to liability, the proposed regulations only require that the applicant demonstrate evidence of insurance coverage within a range of $50 to $500 million dollars, yet to be determined. These regulations do not deal specifically with the liability issue beyond simple operator insurance. No amount of insurance will benefit potential victims of a disaster if limits of liability are invoked under the Limitation of Shipowner's Liability Act.

In light of the phenomenal damage which could result from any mishap or disaster at sea, assuring full liability coverage must be a federal duty. Because the damages could be catastrophic, the indemnity must also be effective without regard to limits. If any question remains about limits on liability, then the EPA should require applicants to waive any limits as a condition of the permit.

In addition, the proposed regulations give the Assistant Administrator of the EPA discretion to propose a level of insurance consistent with the level of risk posed by the applicant's operation. Such discretion, without clear standards, I believe, is terribly ill-advised. If the EPA deems such discretion absolutely necessary, a strict minimum level of liability should be proposed, and guidance must be provided for establishing the "level of risk" determination.

Demonstrated Need

Next, I would call into question the issue of need. The EPA has yet to demonstrate the need for ocean incineration as required under the Marine Protection, Research and Sanctuaries Act -- despite their unsupported assertion to the contrary.

The London Dumping Convention indicates that if land-based alternatives are shown to be "more practical," a license for ocean incineration should not be granted. The EPA, however, interprets need to be presumptively demonstrated if they, themselves, determine that ocean incineration poses less or no increased risk than feasible land-based alternative. I believe that the EPA's interpretation conflicts with the London Dumping Convention's intent for demonstrating need.

In addition, the EPA's Office of Policy, Planning and Evaluation asserts that ocean incineration poses no greater risk than land-based incineration. This contradicts the Agency's acknowledgement that further research is needed on the effects of ocean burning before final conclusions can be drawn regarding the level of risk involved. Without the necessary research and findings, any conclusion that ocean incineration poses no greater risk is obviously premature and without sufficient basis.

In light of these gross inconsistencies, no further action should be taken toward permitting hazardous waste burns at sea until an adequate and substantiated needs assessment becomes final through established administrative process.

Research

With regard to research, the EPA has responded to many of our original concerns by developing a research strategy, yet that strategy is essentially meaningless in terms of timing. Let me point to just a few of the flaws:

- As I emphasized earlier, once the proposed regulations become final, the EPA would begin considering applications for operating permits -- regardless of necessary research yet to be conducted.

- It is our position that baseline studies must be finished before any burns take place, if they are to be at all credible as baseline studies.

- Research on the biology and chemistry of the ocean's surface microlayer is necessary in order to ascertain effects -- which in turn are necessary to make the need determination I mentioned earlier.

- Similarly, research results as to the effects upon human health and the environment must be available to make the need determination.

- Long-term environmental monitoring is not -- but must be -- included as part of the research strategy.

- Research on contingency planning must go beyond minimizing catastrophic incidents; it should provide for specific effective methods of accident avoidance and mitigation.

- Any research conducted on incineration at sea must include the full range of wastes and available incineration technologies in order to determine their effects.

Technical Verification

Another general area of concern is that of technical verification. How should we determine the viability of ocean incineration as a safe and efficient disposal method? We find numerous uncertainties and inconsistencies in this area. In the interest of time, I will cite only a few examples:

- Several provisions of the Toxic Substances Control Act are more stringent than the proposed regulations, including those dealing with incinerator temperature, residence time, use of scrubber for both acids and heavy metals, individual testing of incinerators, and monitoring and recording requirements.

- The "best available control technology" standard is required for land incineration. A parallel standard should be applied at sea, and the regulations must recognize that there are various incinerator and shipboard options available for burning waste at sea.

- There are no performance standards for products of incomplete combustion. Yet such a standard is needed in order to measure operational efficiency, and to determine effects of these products upon the system.

- There are no standards for burn conditions that take into account seasonal; biological, ocean current, and weather variations.

Procedures

The last major area of concern involves the procedures outlined in the proposed regulations. Here, there are several unacceptable flaws.

First, under the proposed regulations, the Gulf of Mexico incineration site is redesignated for up to 10 years, while no other sites have been designated. This very set of regulations sets out specific criteria and procedures for designating ocean incineration sites, many of which have never been applied to the Gulf site.

By this procedural maneuver, the EPA is in effect "grandfathering" the Gulf site as previously designated without sufficient information, despite the fact that the information would be required by the agency's own rule.

We have pointed out to the EPA on past occasions that the Gulf of Mexico contains several economically important species of fish as well as species important to the marine food chain. These include billfish, broadbill swordfish, the protected bluefin tuna, pompano and flying fish. In addition, the western Gulf area is considered to be important in the spawning cycle of the giant bluefin tuna. The area is also thought to be a haven for young broadbill swordfish that are below optimum U.S. market size yet ultimately become available to the U.S. fishing fleet. It is inconceivable to me that the EPA could ignore the existence of these valuable and precious resources, though I am afraid that is all too true.

Designation of the Gulf of Mexico site should be withdrawn until existing requirements have been met. And surely no procedural slight of hand should be allowed to grandfather the site in the proposed EPA regulations when equivalent substantive and procedural requirements have not been met.

There are other procedural shortcomings to which we object, including the following:

o The EPA has rescinded the applicability of the Agency's "voluntary" Environmental Impact Statement (EIS) policy of 1974 with respect to this proposed rule. They claim that the 1979 EIS prepared on the amendments to Annexes I and II of the London Dumping Convention is sufficient for the purpose of these regulations. Review of that EIS reveals the following commitment by the EPA and the State Department: "EPA will prepare environmental impact statements before promulgating interim or final national regulations and designating each new burn site."

While the voluntary EIS policy may be rescinded, the provisions of the 1979 EIS cannot be changed on the EPA's motion by a simple assertion in a rule. An EIS must be prepared for the rules under discussion here. Or the EPA must observe required legal process to supplement (according to Council on Environmental Quality regulations) the 1979 EIS because "there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." The EPA's move to ignore this commitment in its 1979 EIS represents yet another example of the Agency's maneuvers to foil reasonable process in its rush to ratify ocean incineration of hazardous and toxic wastes.

- Discretion afforded the EPA in the proposed regulations creates obvious loopholes, and thus raises further doubts about their actions.

- Granting a 10-year permit assumes that ocean dynamics, species patterns, environmental impact, and acceptable technology, among other factors, will remain static. I would propose that the permits be issued for periods no longer than three years, with annual performance reviews.

- In considering permit applications, the EPA has an obligation to the public to examine compliance histories of the applicant, as I noted earlier.

- Finally, a processing fee of $1,000 is grossly insufficient to cover the costs of permit proceedings, administration, research, agency shiprider, and other costs borne by the EPA, and ultimately by taxpayers.

Conclusion

In summary, I believe that the EPA cannot in good faith approve these regulations until it responds to public concerns, inconsistencies, and inadequacies raised throughout the course of this process. It is a fallacy to think that because we incinerate wastes at sea, away from the human population, humans will not be affected. We are dependent upon the sea for much of our food and livelihood. The potential ingestion of bioaccumulating wastes and their by-products by marine life, whether through poorly regulated emissions or by accident, will eventually affect human life.

We have yet to be convinced that we, or the EPA, through appropriate studies and evaluations, know the risks of ocean incineration well enough to determine what constitutes proper regulation.

However we do know, with great certainty, that even the most sophisticated and seaworthy vessels of the U.S. Navy and merchant marine are involved from time to time in accidents and collisions on the open sea. Not very long ago, just about the time of the last hearing on this subject in Brownsville, we were reminded of this by the collision of a Navy ship with another vessel operating in open water off the coast of Cuba. So it happens, and despite the assurances of safety, those confident assertions sound altogether too much like some echo from the past claims once made by the builders of the mighty Titanic.

Regulation, obviously, should develop through informed decision-making. In this case, we have insisted continually on a process of information-gathering in advance of any permit proposals. We will continue to insist that a rational sequence be followed, and that the public interest be fully recognized and served.

In keeping with this position, I would like to express my strong support for Senator Cranston's S. 1039, the companion measure to H.R. 1295 by Representative Boxer, whose original co-sponsors include three members of the Texas delegation. I am especially appreciative of the fact that the bill calls for a moratorium on the issuance of permits by the EPA for ocean incineration until appropriate scientific research has been carried out by the Agency and an informed evaluation of this waste disposal method can be made in the context of a deliberate waste management strategy. I will continue to encourage members of the Texas delegation to support the measure, as it is fully consistent with the positions expressed in my testimony this morning.

Clearly, we are at another threshold in the nation's approach to management of hazardous and toxic waste. At present, the entire nation is bearing the burden of funding the cleanup of leaking hazardous waste sites, many of which were thought to be safe at the time of the construction and use.

Through the heavy price of the federal Superfund we may -- and I emphasize may -- be able to satisfactorily render these sites safe to surrounding human habitation and the environment. But now comes the EPA, attempting to lead the nation to yet another means of hazardous waste disposal this time with acknowledged ignorance of the impact and a sure knowledge that cleanup of a contaminated ocean site is impossible.

Certainly, in the past, the pollution of our land, rivers and groundwater was not intentional. Ignorance was to blame. But we have learned better, and we had better heed the lessons. In this day and age, no admission of ignorance should be a valid excuse. Not when it is so foreseeable that we might imperil human health on such a huge magnitude as this. Not when the implication is clear that we might place our oceans at grave risk. And surely not when we have the minds and the tools at our disposal to make a proper and comprehensive and scientifically valid assessment of the risks, the benefits, and any need there might be for ocean incineration as a method of waste disposal.

Thank you for this opportunity and thank you for your time.

ROBERT T. STAFFORD, VERMONT, CHAIRMAN
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BAILEY GUARD, STAFF DIRECTOR
LEE O. FULLER, MINORITY STAFF DIRECTOR

United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510

June 24, 1985

The Honorable Mark White
Governor
Congressional Building
Post Office Box 12428
Austin, Texas 78711

Dear Governor White:

Thank you for your thoughtful and eloquent testimony before the Subcommittee on Environmental Pollution regarding ocean incineration. I would like to follow up on your testimony with the questions listed below. Your response will be included in the permanent hearing record.

1. Texas has not yet adopted a Coastal Zone Management Plan. Has it considered adopting one, and would it help the State control the siting, and operation of ocean incineration base ports? Could the State use a Coastal Zone Management Plan to keep incineration vessels out of the State's territorial waters?

2. Please describe the main provisions of the new Texas hazardous waste management act and how it will be administered.

What are the objectives of the permit applicant review provisions and how will they be applied?

3. What actions has Texas taken toward comprehensive hazardous waste management, including:

- maintaining data showing how much hazardous waste is generated, stored, and disposed of in the State?
- maintaining data showing the quantity brought into the State for treatment, storage, and disposal?
- developing criteria for systematic siting of waste disposal facilities?
- establishing an authority responsible for overseeing hazardous waste issues?

5. What is the State's position regarding housing more land-based incinerators for hazardous wastes as Texas industry grows?

6.. How much hazardous waste is generated in the State annually and how is it treated, stored, or disposed of and in what quantities? What quantity of hazardous waste is brought into the State annually for treatment, and disposal?

It would be greatly appreciated if you would respond to these questions by July 12, 1985. This will enable our consideration of relevant issues before the second hearing on this subject.

Sincerely,

Lloyd Bentsen

Lloyd Bentsen

OFFICE OF THE GOVERNOR
STATE CAPITOL
AUSTIN, TEXAS 78711

MARK WHITE
GOVERNOR

July 11, 1985

Lloyd

Dear Senator Bentsen:

I would like to thank you for your taking time out of your busy schedule to both arrange and chair the June 19 hearing of the Subcommittee on Environmental Pollution in Washington, D.C. Your interest and hard work in this vital issue is greatly appreciated.

As you requested, I am sending specific answers to your questions regarding my ocean incineration testimony at the June 19 hearing. If you should have any additional questions, please feel free to contact me. Your dedication to the safety of human health and to protection of the environment is to be commended.

Yours truly,

Mark

Mark White
Governor of Texas

The Honorable Lloyd Bentsen
United States Senator
Committee on Environment and Public Works
Washington, D.C. 20510

MW:ss

Attachment

Follow-up Information on June 19 Testimony

1. Texas has not seriously considered adopting a Coastal Zone Management (CZM) Plan since the decision in 1981 to not submit such a plan. At this time it does not appear that a CZM plan would provide adequate benefit to Texas in federal funding to justify its adoption. Nor would a CZM plan serve as an assurance of ultimate State control over ocean incineration base ports and incineration in the State's territorial waters. The Secretary of Commerce has the authority to override a state's nonconcurrence with applicant certification that the proposed activity complies with that state's CZM plan. However, the State of Texas is following with interest the efforts by the State of Alabama to invoke the "consistency clause" under its approved CZM plan to acquire stronger EPA permit provisions for hazardous waste storage and transfer facilities proposed by ocean incinerator applicants at its ports. Certainly, the applicability of the consistency clause is in question subsequent to the U.S. Supreme Court's decision in *California v. Interior*, particularly as the CMZA undergoes reauthorization.

2. The main provisions of the comprehensive hazardous waste management legislation are as follows:

   - establish a hierarchy of preferred hazardous waste management technologies;

   - establish an interagency coordination council among appropriate regulatory agencies, to maintain consistency in agency rules; consider incentives to encourage reduction and recycling; and evaluate feasibility of waste exchanges, clearinghouse, and household hazardous waste collection;

   - require a biennial report from Texas Water Commission, evaluating adequacy of fees and outlining projections of waste volumes and disposal capacity;

   - prohibit permit issuance of hazardous waste landfill or land treatment facility in certain high-risk areas;

   - establish a lead agency to conduct a sole permit hearing;

   - establish a local review committee process to identify and resolve issues *before* a hearing;

   - enhance inspection activities of hazardous waste management facilities;

- establish a registry of hazardous waste facilities which may constitute an imminent and substantial endangerment to include;
  - priority ranking of need for remedial action,
  - an actual plan for remedial action,
  - a process by which to expedite cleanup;
- allow for apportionment of costs and right of contribution by voluntary parties who clean up a release which presents an imminent and substantial endangerment;
- allow for State recovery of any cleanup costs incurred; and
- strengthen provisions for injection wells.

The Texas Water Commission will administer these provisions through rulemaking. The law takes effect September 1, 1985.

There are several provisions in the legislation regarding permit applicant review:

- Texas Water Commission will serve as the lead agency in hazardous waste permitting proceedings under its jurisdiction. Other agencies may submit proposed findings as parties to the hearing.
- Compliance summaries of an applicant's hazardous waste management activities shall be developed by the appropriate state agencies. Such evidence, if entered into the record, shall be considered in the permit decision.
- A local review committee process shall be made available whereby applicants may enter into agreements with affected parties to identify and resolve concerns prior to the hearing.

3. The Texas Water Commission has begun the process of data maintenance on amounts of waste generated, stored, treated, disposed, imported, and exported in Texas. That agency has also developed systematic siting criteria and has served as the primary oversight entity with regard to hazardous waste issues.

However, pursuant to the comprehensive hazardous waste legislation, data maintenance and reporting will be enhanced. The biennial projection reports will assure this increased capability. The provisions of this legislation include detailed characteristics which make sites unsuitable as hazardous waste management facilities. Additionally, the Texas Water Commission's authority as an oversight entity is strengthened in the amendments, and the establishment of the interagency coordination council will require coordination in such oversight.

4. If proposed land-based incinerators are shown to be both effective and safe, so as to assure protection of human health and the environment, I believe that the Texas Water Commission will be considering the merits of permitting such facilities through the designated administration process.

5. According to Texas Water Commission figures, the latest of which were compiled in 1983, the following quantities were generated, treated, stored, disposed, imported, or exported:

A.

Waste Treated:	61%	38.4 million tons
Waste Stored:	21%	13.2 million tons
Waste Disposed:	18%	11.3 million tons
Deep well injection:	78%	8.7 million tons
Surface impoundments:	8%	.9 million tons
Other:	8%	.9 million tons
Landfill:	5%	.6 million tons
Total Produced - 1983		62.9 million tons

B.	Regulated Hazardous Waste Generators in Texas	2400 Generators
C.	Regulated Hazardous TSD Facilities in Texas	1100 Facilities
D.	Hazardous Waste Imported to Texas - 1983	8197 tons
E.	Hazardous Waste Exported from Texas - 1983	45745 tons

National Governors' Association

John Carlin
Governor of Kansas
Chairman

Raymond C. Scheppach
Executive Director

June 18, 1985

The Honorable John H. Chafee
Chairman
Subcommittee on Environmental Pollution
Committee on Environment and Public Works
567 Senate Dirksen Office Building
Washington, D.C. 20510

Dear Chairman Chafee:

The National Governors' Association has recognized the need for environmentally sound and effective means of disposing of hazardous and toxic wastes, and recognizes that ocean incineration may eventually be demonstrated to be both safe and effective. However, the Governors have strongly endorsed a position calling for the development of comprehensive standards and criteria, baseline data, liability provisions, and environmental assessments and impact statements before EPA advances ocean incineration permits or permit proposals. In addition, the Governors recommend that at-sea incineration permits must be in compliance with the consistency provisions of the Federal Coastal Zone Management Act, as amended. I would note, however, that the Governors' position is not intended to limit or prohibit research permits.

I will very much appreciate your inclusion of the attached NGA policy position in the record of your hearings on ocean incineration, and look forward to working with you as bills advance, to ensure that the Governors' concerns on this important issue are considered.

Sincerely,

Governor Anthony S. Earl
Chairman
Committee on Energy and Environment

Enclosure

National Governors' Association

John Carlin
Governor of Kansas
Chairman

Raymond C. Scheppach
Executive Director

D. - 19

HAZARDOUS WASTE MANAGEMENT

Ocean Incineration of Toxic Waste

The National Governors' Association realizes the need for effective means of disposal of hazardous and toxic wastes; it also realizes the need to protect the population and the environment from possible adverse effects of such waste disposal.

Given the ongoing concerns of states about ocean waste incineration and the prospect of the U.S. Environmental Protection Agency 1) establishing precedents regarding permitting of at-sea toxic waste incineration at the earlier designated Gulf of Mexico burn site and 2) taking some action in the near future regarding designation of disposal zones off the Atlantic and Pacific coasts, the National Governors' Association strongly endorses the following:

- Before any EPA permits or permit proposals for ocean incineration are advanced, comprehensive standards and criteria must be developed, made available for thorough public review, and promulgated as agency rules. EPA's proposal to permit ocean incineration of toxic and hazardous wastes under the exception clause in the Marine Protection and Sanctuaries Act (Ocean Dumping Act) is inappropriate, lacks acceptable technical substantiation, and is unacceptable to states.
- Liability and limitations on liability of owners/operators of incinerator ships must be adequately spelled out to include specific events under which compensation would be granted, means for the public and damaged parties to file claims for damages, extent of compensation, and mandatory insurance provisions. It is imperative that the EPA require owners/operators to assume liability as a condition of a permit being granted, regardless of limitations on liability which might exist under other statutes or common law, including those related to international waters. The option to use such limitations should categorically be denied.
- Additional studies of the entire ocean incineration process must be conducted to create baseline data and to provide conclusive evidence of risks concerning environmental health and human safety.
- Contingency plans for accidental or catastrophic events must be developed that will be comprehensive and realistic, that reflect guarantees of safe and timely action, and that outline clearly the roles of the permittee: federal, state, and local governments; and private authorities in any such contingency.
- Environmental assessments and impact statements must be prepared for proposed at-sea incineration permits in strict accordance with the National Environmental Policy Act.
- Thorough assessment should be made of the onshore support facilities necessary for the safe and efficient receipt, interim storage and ultimate transfer of the toxic and hazardous material to the incineration vessel.
- Proposed at-sea incineration permits must be in compliance with consistency provisions under Section 307 of the Federal Coastal Zone Management Act, as amended.
- It is not the intention of the resolution to limit or prohibit research (or test) permits for ocean incineration issued pursuant to proper public notification and review.

Coastal States Organization

An alliance of the Coastal States, Commonwealths, and Territories providing an effective voice in the formulation, development, and implementation of national marine and coastal resource programs and policies.

CHAIRMAN
Richard F. Delaney
Boston, Massachusetts
(617) 727-9530

DIRECTOR
R. Gary Magnuson
Washington, D.C.
(202) 628-9636

June 17, 1985

Senator John Chafee
Chairman
Environmental Pollution Subcommittee
Senate Environment and Public Works Committee
U.S. Senate
Washington, D.C., 20510

Dear Senator Chafee:

I am submitting the Coastal States Organization's (CSO) policy position on the ocean incineration of toxic wastes, and respectfully request its inclusion in the Subcommittee hearing record.

The CSO is a nonprofit, nonpartisan association representing the collective interests of the 35 coastal state and territorial governors in U.S. ocean and coastal policy, planning, and management. Its delegates, appointed by the governors, meet periodically to discuss and arrive at a consensus on ocean and coastal issues. The enclosed policy statement is one of many which the CSO has adopted concerning ocean and coastal legislation before the Congress.

The CSO's policy position on ocean incineration was adopted by the CSO January 17, 1984, and subsequently endorsed by the National Governor's Association. It reflects the states' concern that there are still too many uncertainties regarding the technology and environmental effects of incinerating toxic and hazardous wastes at sea for the Environmental Protection Agency (EPA) to move ahead with plans to issue permits and designate sites for ocean incineration. Therefore, the CSO has recommended several actions which should be carried out to facilitate more effective management and planning, including additional research, the development of comprehensive standards and criteria for the issuance of permits, incinerator ship liability requirements, and the preparation of contingency plans for accidental or catastrophic events.

The CSO, at this time, has no formal position regarding Senator Cranston's bill, the Ocean Incineration Research Act, S. 1039. Our organization has taken this legislation under advisement as well as EPA's proposed ocean incineration regulations and will notify the Subcommittee of any further recommendations.

We look forward to working with the Subcommittee on this issue.

Sincerely,

R. Gary Magnuson

R. Gary Magnuson
Director

OCEAN INCINERATION OF TOXIC WASTE

The Coastal States Organization realizes the need for an effective means of disposal of hazardous and toxic wastes. It also realizes the need to protect the population and the environment from possible adverse effects of such waste disposal.

Given the ongoing concerns of coastal states about ocean waste incineration and the prospect of the U.S. Environmental Protection Agency (1) establishing precedents regarding permitting of at-sea toxic waste incineration at the earlier designated Gulf of Mexico burn site and (2) taking some action in the near future regarding designation of disposal zones off the Atlantic and Pacific coasts, the Coastal States Organization strongly endorses the following:

- Before any EPA permits or permit proposals for ocean incineration are advanced, comprehensive standards and criteria should be developed, made available for thorough public review, and promulgated as Agency Rules. EPA's proposal to permit ocean incineration of toxic and hazardous wastes under the exception clause in the Ocean Dumping Act lacks acceptable technical substantiation ~~and~~ is unacceptable to coastal states;
- Liability and limitations on liability of owners/operators of incinerator ships must be adequately spelled out to include specific events under which compensation would be granted, means for the public and damaged parties to file claims for damages, extent of compensation, and mandatory insurance provisions. The EPA should require owner/operators to assume liability as a condition of a permit being granted, regardless of limitations on liability which might exist under other statutes or common law, including those related to international waters;
- Additional studies of the entire ocean incineration process should be conducted to create baseline data and to provide conclusive evidence of risks concerning environmental health andhuman safety;
- Contingency plans for accidental or catastrophic events must be developed that will be realistic, that reflect guarantees of safe and timely action, and that outline clearly the roles of the permittee, federal, state, local government, and private authorities in any such contingency;
- The Environmental Protection Agency must make a strong commitment to equitable public participation, in fulfilling all its responsibilities regarding ocean incineration; provide full and early disclosure of information; and make all relevant data available to state and non-governmental research bodies, as well as to private groups;
- Environmental assessments and impact statements must be prepared by EPA for proposed at-sea incineration permits in accordance with the National Environmental Policy Act.

Adopted January 17, 1984

State of New Jersey
HAZARDOUS WASTE FACILITIES
SITING COMMISSION
CN 406, Trenton, N.J. 08625

COMMISSIONERS:
Ann Auerbach
Stephen Capestro
Roy T. Gottesman
John J. Heinz
Thomas Leane
Gordon Millspaugh
George Polzer
Max Weiss

Frank Dodd
Chairman

Richard J. Gimello
Executive Director

July 19, 1985

Honorable Lloyd Bentsen
United States Senate
Committee on Environment
and Public Works
Washington, DC 20510

Dear Senator Bentsen:

I apologize for the delay in responding to your June 24, 1984, letter; I was on vacation.

Enclosed is my response to the questions raised by both you and Senator Lautenberg.

If you would like additional information, please do not hesitate to contact me at 609-292-1459.

Sincerely,

Richard J. Gimello
Executive Director

RJG:mv

Enclosure

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QUESTION SUBMITTED BY SENATOR LLOYD BENTSON

QUESTION: Has New Jersey adopted a Coastal Zone Management Plan? If so, what control does it give the State over location of base ports and protection of New Jersey territorial waters in connection with ocean incineration?

RESPONSE: New Jersey has adopted a Coastal Zone Management Plan, and any base port or facility constructed immediately at the water's edge (i.e., below the main tide line, or within three miles) would be considered within the State's territorial waters. Since any base port construction would have a significant impact on New Jersey's waters, this construction would have to be conducted in compliance with the appropriate State regulations.

Specifically, as of April, 1985, the At-Sea Incineration plan was not deemed consistent with the New Jersey Coastal Zone Management Plan because the information submitted was not sufficient to ensure the public health, safety, and welfare of the residents of New Jersey and protection of the coastal ecosystem (see attached).

QUESTIONS SUBMITTED BY SENATOR FRANK LAUTENBERG

QUESTION #1: Does the EPA Ocean Incineration Proposal interfere in any way with your efforts?

RESPONSE: I believe the potential for interference is real, however, at this point the EPA proposal has only served to confuse the situation in New Jersey.

As I noted in my testimony before the Subcommittee on Environmental Pollution, New Jersey and many other states have gone to great lengths to define their specific hazardous waste treatment and disposal needs. The EPA has not made a similar definitive examination of need nor have they approached the states in question for assistance. The national incineration survey appears to have been conducted after the fact and, by any reasonable standard, is inaccurate.

I offer, in support of these statements, the fact that New Jersey, New York, and Pennsylvania have completed individual state need assessments and each state has reached similar conclusions. Each has identified rotary kiln as the incineration technology of choice because of its versitility in destroying liquids, sludges, and solids, and because the liquid waste available in these states is minimal. In addition, both North Carolina and Ohio have recently authorized the construction of rotary kiln incinerators for commercial operation. Even with the RCRA amendments fully implemented, liquid waste generation is likely to decrease while sludges and solids are likely to increase. It is important to note that these conclusions were reached independently by each state. EPA's assessment on the other hand appears to have been developed in an attempt to justify the need for ocean incineration.

Furthermore, the EPA proposal is presented without a clear policy explanation about why the ocean is being considered as a medium for the treatment and disposal of hazardous waste. These inconsistencies place many states in apparent conflict with EPA. The perception of conflict is further aggravated by the pending designation of the North Atlantic burn site. After all, if the larger east coast generating states prefer technologies other than ocean incineration, and have assigned waste in accordance with these preferences, where will the waste to support such an operation in the North Atlantic come from.

How does EPA view this apparent conflict and what weight is EPA giving state preference prior to the designation of burn sites?

Finally, I would suggest that EPA and representatives from the major east coast generating states meet directly to discuss this issue prior to any further action on ocean incineration. Such discussion should take place in settings other than public hearings. I would be happy to make such arrangements through the Consortium of State Hazardous Waste Siting Authorities, Inc., which I chair.

QUESTION #2: Page III of the Commission's report discusses the impact of the 1984 RCRA amendment on the Commission's plan. The report indicates that the main change in the next updated plan will be greater use of incineration because of the 1984 RCRA restrictions on land disposal.

A. Do you have any preliminary estimates of the amount of waste which will have to be disposed of in ways other than land disposal when the 1984 RCRA restrictions take effect?

B. Do you have any preliminary estimates of how many additional incinerators will be required to dispose of this waste?

RESPONSE: The Commission's plan indicates a preliminary estimate of a minimum of 23,000 tons of hazardous waste currently being commercially landfilled that would require alternate disposal when the RCRA restrictions take effect. All of this waste is currently sent to out-of-state commercial landfills.

It should not be assumed that all of this waste will require incineration. One of the expected impacts of the new RCRA restrictions will be the promotion of on-site source reduction, recycling, and detoxification of hazardous waste, therefore, lessening the need for new, commercial facilities. However, if all of the waste does, for one reason or another, require commercial incineration, the Commission's estimate of one or more new incinerators with a capacity of 50,000 to 75,000 tons per year would accommodate this waste.

In regard to hazardous waste that is managed by on-site land disposal (non-commercially), again there is no reason at this assume to this expect will waste to enter the commercial incineration market. In fact, the national emerging trend is for large generators to manage their waste at on-site incinerators in order to comply with RCRA and to reduce their future liability.

QUESTION #3: EPA's Science Advisory Board Report raises numerous questions about incineration. How would you respond to each of the following SAB findings:

*Research on incinerator performance has occurred only under optimal burn conditions. Short-term incinerator operations under upset conditions can greatly increase incinerator loadings of the environment.

*EPA's program to assess the exposures of organisms to chemicals from incinerators has been inadequate.

*The toxicities of emissions from incinerators are largely unknown.

*While there is no documentation that incinerators result in adverse ecological effects or significant acute human health hazards, monitoring programs used so far were "few and narrow in scope."

*EPA's use of destruction efficiency as a measure of the effectiveness of incineration does not completely analyze incinerator emissions and therefore is not an adequate basis for developing exposure assessments.

RESPONSE: I am not in a position to comment on the technical issue raised by the Science Advisory Board Report, except to say that in general, additional testing to resolve this question raised should be conducted and all conclusions published at the earliest possible opportunity. The contradicting conclusions reached by the SAB and OPPE have resulted in significant confusion.

I have forwarded to the New Jersey Department of Environmental Protection a copy of Question #3 and have asked the Division of Environmental Quality, Bureau of Air Quality to respond directly.

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON

DIVISION OF COASTAL RESOURCES

PLEASE ADDRESS REPLY TO:
CN 401
TRENTON, N.J. 08625

April 30, 1985

Mr. John P. Sandstedt,
Vice President, Environmental Affairs
At-Sea Incineration, Inc.
1930 North Fleet Street
Port Newark, New Jersey 07206

Dear Mr. Sandstedt:

This letter is to advise you that I cannot make a finding of consistency on your plan to transport and incinerate liquid chemical waste through and seaward of the New Jersey Coastal Zone at this time. For a finding of consistency under Section 307(c) of the Federal Coastal Zone Management Act to be made, I would have to determine that the proposed transport and incineration operation is consistent with all elements of New Jersey's Coastal Management Program. The information submitted in support of the consistency certification and EPA research and operational permits is not sufficient to ensure the public health, safety and welfare of residents of New Jersey and protection of the coastal ecosystem - two of the eight basic coastal policies which form the foundation of the New Jersey Coastal Management Program.

In particular, the certification asserts that the design, construction, movement, and operation of the Apollo-class vessels will be in accordance with Coast Guard and EPA requirements, thereby ensuring the policies concerning Special Areas (N.J.A.C. 7:7E-3.0), Marine Fish and Fisheries (N.J.A.C. 7:7E-8.2), Shellfisheries (7:7E-8.3), Water Quality (7:7E-8.4), Important Wildlife Habitat (7:7E-8.10) and Air Quality (7:7E-8.11) will be met. EPA staff has advised me that no permits for either a trial burn or an operational permit will be considered until EPA promulgates ocean incineration regulations. This will be several months to a year away. In addition, EPA has not formally designated the North Atlantic Incineration Site. In light of the many outstanding questions raised by this Department regarding the proposed regulations (see attached statement of Dr. Donald Deieso, Director, Division of

Environmental Quality at the West Long Branch, April 18, 1985 EPA Public Hearing), I find it is premature to make a final consistency determination.

I am also concerned that risks associated with collision or other casualties have not been adequately assessed. A study titled "Analysis of Existing and Potential Navigational Hazardous in Delaware Bay" prepared by Engineering Computer Optecnomics for the Cape May County Planning Board in January 1981 indicates that collision risks are significant. Since the information supporting the EPA application indicates that 1.3 million gallons of liquid chemical waste could potentially be shipped through the New Jersey coastal zone once every two weeks and a collision involving an Apollo vessel could have a catastrophic effect not only on natural resources but also to the public health, safety and welfare of the people of New Jersey, I would like to know the probability of such an event prior to making a final determination. I understand that this issue will be addressed in EPA's Incineration Study, the details of which have yet to be released, as indicated in the attached statement.

In summary, I cannot make a determination of consistency with the New Jersey Coastal Management Program until ocean incineration rules are promulgated by EPA and active processing of the research and operational permits commences. In addition, it must be demonstrated that the probability of a liquid chemical waste casualty is acceptably remote.

Sincerely,

John R. Weingart,
Director

JRW/BT/sn
cc: Mr. Peter Tweedt, Assistant Administrator, NOAA-OCRM
Ms. Kathryn Cousins, North Atlantic Regional Manager NOAA-OCRM
~~Mr. David S. Hugg, III, Delaware Department of Natural~~
Resources and Environmental Control
✓Director Lawrence Schmidt, DEP-Planning Group
Director Donald Deieso, DEP-Division of Environmental Quality
Mr. Peter Hess, DNREC Legal Office
Mr. Neil Yoskin, Greenstone and Sokol

State of New Jersey
HAZARDOUS WASTE FACILITIES
SITING COMMISSION
CN 406, Trenton, N.J. 08625

COMMISSIONERS:
Ann Auerbach
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Roy T. Gottesman
John J. Heinz
Thomas Laane
Gordon Millspaugh
George Polzer
Max Weiss

Frank Dodd
Chairman

Richard J. Gimello
Executive Director

August 12, 1985

Honorable Lloyd Bentsen
United States Senate
Committee on Environment
and Public Works
Washington, DC 20510

Dear Senator Bentsen:

As I promised in my correspondence of July 19, 1985, attached are the comments on the EPA regulations which deal in part with the questions originally submitted to this office.

Sincerely,

Richard J. Gimello
Executive Director

RJG:mv

Attachment

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF THE COMMISSIONER
CN 402
TRENTON, N. J. 08625
609-292-2885

August 9, 1985

Ms. Majorie Pitts
Criteria & Standards Division
WH-585
U.S. Environmental Protection Agency
401 M Street S.W.
Washington, D.C. 20460

Dear Ms. Pitts:

The New Jersey Department of Environmental Protection has completed its technical review of your proposed Ocean Incineration Regulations and the two supporting reports of the Science Advisory Board and the Office of Policy, Planning, and Evaluation. Although our comments and recommendations are being submitted after the close of the comment period, we wish to point out that the OPPE report and the SAB report were not available until well after the public hearing in New Jersey. In fact, the SAB report was not obtained until the second week of June and then only after we contacted EPA Headquarters to request a copy. This procedure was contrary to the pledges of the presiding officer at the hearing who promised that the State and the interested public would be sent copies immediately upon their availability. I trust that our comments will be fully considered by EPA notwithstanding the late date of submission.

Technical comments have been generated by our Office of Science and Research (OSR) and the Division of Environmental Quality. The two sets of comments complement each other in the presentation of issues and areas of concern to the Department. Policy aspects of the proposed Ocean Incineration Regulations were presented by Dr. Donald Deieso, Director, Division of Environmental Quality at the Monmouth College hearing on April 17.

Comments of the Office of Science & Research (OSR)

I. Specific Comments on the Proposed Rules Include:

1. First of all, in their commentary on "Monitoring and Recording Requirements" (S234.60) EPA admits that there are no "Standard Methods" for environmental monitoring of this type of activity at this time and that methods are evolving as they are used and improvements are made. Secondly, they recognize in the section on the "Regulation of Incineration Site Use" (S234.79) that environmental monitoring programs

must be established in order to identify immediate and short term as well as the long term impacts (adverse effects) from incineration operations. It can be argued that baseline environmental data must be established to spot future adverse effects and that standard methods need to be established before the above can be done and that research is necessary to pre-test these standard methods before implementation. This issue may have been considered in the unpublished "EPA's Office of Water Research Strategy Report" but if it has not, a set of research permits should probably be established to address the concerns prior to or concurrent with the trial burns. The importance of these issues will also become apparent as EPA begins to develop an "enforcement strategy" (S234.66) to further define the appropriate response measures for different types of permit violations.

To partially correct this omission and to generate baseline data it might do to recommend that the first sentence in the "Regulation of Incineration Site Used" (S234.79b) should be changed to read "An environmental monitoring program shall be implemented for each site and will include baseline or trend assessment surveys, etc."

2. Another important issue is the lack of public health emphasis in the required Contingency Plans (S234.19) for each permittee. For example, the commentary on this regulation addresses primarily the applicant's response to spill incidents in the aquatic environment as it relates to necessary cleanup and mitigation measures. No apparent reference is made to a "catastrophic event" regarding such items as explosion and fire with the concomitant toxic air plume as it may relate to the congested population centers around New York and Newark harbors. Contingency plans should reflect a worst case scenario as it relates to emergency response and public health from such an event. For example, what are the necessary emergency responses, evacuation plans, etc. to such an event in the constricted waterway of the Kill Van Kull. How does the permittee's standard operating procedure interact with the shore based effects of such an event. A risk assessment of the general effects of such an event is necessary before the effectiveness of the permittee's contingency plan can be evaluated. Such a risk assessment should therefore be included as an integral phase of the Contingency Plan.

3. Another issue with enforcement implications has to do with the discretionary need of duplicate analysis by the permit Manager in the "Waste Analysis" section (S234.S8). The rule states that at the permit Program Manager's discretion, EPA may take duplicate samples for confirmatory analysis. For enforcement leverage and QA purposes it would be better to state that duplicate samples will always be taken and systematic replicate runs will be done blindly to guarantee a regulatory and scientific confirmatory tool for the routine operation of the waste handler.

4. Some general comments about the technical aspects of the proposed rules include:

   A. Because of the lack of air pollution controls, it is recommended that limits be set on chlorine and ash contents for all waste categories.

   B. Test burns should be made using a worst case waste containing the maximum levels of ash and chlorine.

   C. During the first year of operation, monthly stack tests should be required for HCL, trace metals, and PIC's.

   D. No two incinerators are identical, thus each unit must be tested using a worst case waste.

   E. Total deposition rates for HCL, trace metals and PIC's need to be estimated for each ship.

   F. Bottom ash and tank washing disposal needs to be addressed.

   G. QA plan needs to be developed for continuous monitoring equipment for CO, CO_2, O_2, temp., etc.

   H. Experience with waste disposal firms (land-based) generally shows that maintenance and housekeeping factors weigh heavily on the performance of the total operation, including the efficiency of the incinerator itself. The "at-sea" operation is exposed to not only the normal waste industry "environment", but ~~also~~ the ocean "environment". The regulations did not appear to address specifics of "extra" maintenance to protect equipment in these harsh "environments".

   I. The discussions about lack of PIC knowledge indicate that appropriate monitoring strategies should be developed before starting the project.

II. Specific Comments on SAB Report

The SAB has reviewed the issue of liquid hazardous waste incineration and its impact on the environment. The key conclusions related to the SAB study are:

1. Concepts of destruction efficiency do not address environmental impacts of incinerator effluents.

2. Emission studies need to be carried out under steady state and non-steady state condition typical of normal operation variation.

3. Both the physical and chemical nature of effluents need to be more completely characterized.

4. Validation of sampling and analysis procedures needs to take place and measurement of substances in stack testing studies also need better QA.

5. The dynamics of environmental transport should be evaluated in a way that is useful for total exposure assessment.

6. The transport/fate of emissions needs to be characterized by state-of-the-art field monitoring studies.

7. Assessing potential effects of incinerator effluents requires both laboratory and field studies.

8. Long term monitoring is necessary to assess environmental impacts that occur over the course of many years.

While we believe that the above points provide a basis for an aggressive research program on incineration effluent impacts in the environment, these concerns do not yield a basis for regulatory advancements by EPA regarding waste incineration in general. For example, while complete characterization of organic emissions from incinerators would be important to characterize total risks, the approach is not feasible in the context of current analytical chemistry and risk assessment capabilities. Thus, research needs to be accelerated in this area. Biological assays, such as the Ames-test, may provide useful holistic information on controlling or assessing risks from complex incinerator effluents. Perhaps EPA should begin to use biological testing in conjunction with any studies including chemical testing of incinerator effluents. In any event, EPA needs to develop a mechanism to begin to address the above research issues. Such an effort would hopefully lead to the use of better combustion technologies.

The EPA's Office of Policy, Planning and Evaluation (OPPE) concludes that ocean and land based incineration are viable, safe technologies by assuming that the premise of destruction efficiency is a useful measure of risk and that the current approach is the best now available. SAB's position and OPPE's recommendations must be reconciled.

One possibility is to structure the permitting process so as to use the research permits to answer the questions raised by the SAB in conjunction with the test burns. Also, in order to allay any fears about the railroading of an operational permit for an arguably "unproven technology", the test burn phase of the permit process should be removed from the operational component and made a part of the research permit process.

The recommendations that SAB made concerning quantifying emissions under all operating conditions, validating methodologies, studying meteorological and transport models with field validation, performing exposure assessments and determining food web interaction are all things that should be done prior to the implementation of operational permits.

Comments of the Division of Environmental Quality (DEQ)

1. The major risks with Ocean Incineration are the harbor storage and loading operations, rather than the burning itself. The Science Advisory Board, in its April 1985 Report on the Incineration of Liquid Hazardous Wastes, states that emissions from handling, transportation, and storage "may be as great or greater than the toxic chemicals emitted from the incinerators." EPA has paid insufficient attention to the regulation of loading hazardous wastes on ships.

2. Such a loading facility in New Jersey would be subject to the siting rules of the Hazardous Waste Facilities Siting Commission, as well as New Jersey DEP hazardous waste facility rules.

3. Prior to the construction or operation of the harbor storage and loading facilities, the EPA should propose and adopt specific Resource Conservation and Recovery Act (RCRA) standards. Loading ships with hazardous waste requires specialized standards, not yet included in the RCRA rules. The implication in the discussion on Transportation and Loading Issues that existing RCRA and Coast Guard rules adequately address transfer operations is not correct. For example, there are no specific federal standards for controlling air contaminants released when ships are loaded.

   It is evident that EPA has not fully considered emissions from vapors displaced when loading ships. Otherwise, the differential between the ocean-based system and the land-based system in Tables 2 and 3 for Transfer and Storage would be greater. Land-based systems for hazardous waste tank loading typically have controls on vapors displaced from the tanks. However, ships usually do not have controls for vapor displacement during filling, and emissions from filling such ships can be substantial. The DEP believes this failure to develop specific rules for the harbor facilities for hazardous waste incineration ships to be the single greatest problem with the proposed rules.

4. The New Jersey Hazardous Waste Siting Commission is planning land based hazardous waste treatment facilities to handle New Jersey generated hazardous wastes. Facilities designed to handle multi-state hazardous wastes, including a hazardous waste incineration site off the New Jersey coast, should involve regional agreements coordinated by EPA, so the burden and risks of such facilities are equitably distributed between the states within the region. New Jersey is already the host of a major commercial hazardous waste incinerator. If New Jersey is also to have a regional hazardous waste incineration site off its coast, then it is only fair that non-coastal states host regional facilities for other hazardous wastes. In particular, New Jersey relies on other states to landfill hazardous wastes which cannot be incinerated. If it is to host an off shore incineration site, there should be reciprocal provisions for New Jersey industry to landfill non-combustible hazardous wastes in facilities in other states.

5. Provision should be made for data on waste composition to be provided to the states in advance of each burn and for data on the combustion and emissions to be provided after each burn. EPA should require that the data required by 234.61 be submitted by the permittee to the relevant states, as well as the Permit Program Manager.

6. Also, the use of a scrubber on the incinerator may be warranted. The June 1981 project summary for the report of the Interagency Ad Hoc Work Group for the Chemical Waste Incineration Ship Program recommended on page 6, that, "A high-energy venturi scrubber with a pre-quench and a mist eliminator tower utilizing sea water should be considered for shipboard evaluation. Marine environmental effects of single-pass sea water scrubbing system must be evaluated, however." The use of such scrubbers should be evaluated in view of the 121,600 tons per year of hydrochloric acid which would be emitted to the atmosphere without such scrubbers. This is about the same amount of acid gases released by a major coal fired power plant. EPA's avoidance of this substantial emission level is evidenced in Tables 2 and 3 (pages 75 and 76) of its Assessment of Incineration as a Treatment of Method for Liquid Organic Hazardous Wastes. Within these summary tables of quantities of pollutants released, the emission of hydrochloric acid is conspicuously not included. Differences between land-based and ocean-based-system hydrochloric acid emissions are dramatic.

7. Toxic metal emissions:

The proposed concentration limit on each metal in each waste of 500 ppm is unnecessarily high, especially for the more toxic and carcinogenic metals. Lower limits for arsenic, cadmium, chromium, beryllium, lead, nickel and mercury should be adopted. (Berylluim should be a specified metal. Note that there is a National Emission Standard for Hazardous Air Pollutants for berylluim.) All these metals should be restricted to trace quantities, as is proposed for mercury and cadmium. Five hundred ppm should not be considered a trace quantity.

EPA should provide an example of how the Appendix A mathematical plume and oceanic dispersion model and the LDC procedures are used to arrive at metals limits for the proposed site off New Jersey. In addition to any such modelling procedures, uniform maximum trace metal concentrations should be specified within the rule. In this way the public can be assured that the quantities are truly trace, and the applicant and waste generator have a firm standard to use for planning pretreatment and disposal activities.

We agree that metal limits on the blended wastes should be less than the limits on each waste as generated. A factor of 10 is reasonable, with the metal limit on the blended waste set at the quantifiable level (or the level in normal fuel oil, whichever is higher); and the limit on each waste as generated no higher than 10 times the quantifiable level (or equal to the level in normal fuel oil, whichever is higher).

It is important that the content of the highly toxic or carcinogenic metals be minimized because there will be no particulate control devices on the shipboard incinerators, and such metals will likely be emitted as fine particulates with long atmospheric residence times. The tendency for metals to be emitted as submicrons particulates is especially true of arsenic, cadmium, mercury and lead, which have relatively low boiling points and are subject to vaporization in the hot flame and recondensation on submicron particules after the flame.

8. The "environmental performance standard" for hydrochloric acid appears to be a nonstandard if the example provided is any indication of how it will be applied. If EPA is serious about limiting total acid forming emissions, either scrubbing should be required, or the halogen and sulfur content of the waste restricted to low levels.

9. Continuous monitoring for total unburned hydrocarbon concentration should be required. Data obtained from such monitoring will assist in developing possible future limitations on products of incomplete combustion (PIC's). Without such data, it will be difficult, if not impossible, to ever set an upper limit on the concentration of total unburned hydrocarbons, which is one of the two approaches discussed for regulation of PICs.

10. NJDEP supports EPA's proposal to require periodic destruction efficiency tests. A long term data base on the effectiveness of ocean incinerators should be developed. Also, equipment deteriorates with time and waste composition may change. While the continuously monitored operating parameters will be indicators of destruction efficiency, they do not directly correlate with it. Therefore, periodic tests are prudent.

11. Within Section 234.63, relevant state environmental protection agencies should be specified as authorized representatives of the Permit Program Manager. While states with harbor facilities should already have the authority to sample and inspect records, it should be made clear that those states within 500 miles of the incineration site also have this authority.

12. Within Section 234.67, the Permit Program Manager should be able to issue a suspension order based on significant violation of permit conditions, as well as imminent and substantial risk to human health or to the environment.

13. We support the EPA proposal to forward copies of a completed application to state coastal zone management, air, and water pollution control agencies within 500 miles of the incineration site, for review and comment prior to the agency proposing a draft permit.

    The application should also be forwarded to the states with ports through which the waste may be shipped or at which vessels will be loaded.

14. Permit fees should be increased to reflect the cost of permitting and subsequent compliance determination activities.

In conclusion, we reiterate that EPA's approach to the Ocean Incineration Regulations is generally reasonable, but incomplete. The major point of the SAB report will have to be addressed by EPA in the final regulations. We expect that the above recommendations can help EPA improve the regulations. Routine operation of ocean incineration of hazardous wastes should not occur until remaining issues are fully addressed. We thank you for the opportunity to comment. If you have any questions on our comments and recommendations, please feel free to contact me directly.

Sincerely,

Lawrence Schmidt, Director,
Planning Group and Chairman of
the Department's Ocean Waste
Management Committee

c: Dr. Dennis Suszkowski, EPA Region II
Mr. Richard Gimello, NJ Hazardous Waste Facilities Siting Commission
Dr. Donald Deieso, Division of Environmental Quality
Dr. Thomas Burke, Office of Science and Research

TESTIMONY OF
JIM MATTOX
ATTORNEY GENERAL OF TEXAS
TO THE SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
CONCERNING OCEAN INCINERATION
WASHINGTON, D.C. JUNE 19, 1985

Senator Chafee, Senator Bentsen, and Members of the Subcommittee: thank you for inviting me to testify before you about incineration at sea of hazardous wastes. I regret that I am unable to attend in person. I am sending Brian Berwick, an Assistant Attorney General in my Environmental Protection Division, to testify in my place. I request that the complete text of my written testimony be introduced into the record.

As the Attorney General of Texas, I would like to discuss some of the legal issues raised by incineration of wastes at sea. I want to make clear at the outset that there is considerable legal uncertainty in the area. My remarks should not be construed as endorsements by the State of Texas of a given line of legal argument. Rather, they represent my present best prediction about how judges would rule if certain issues arose.

I am very concerned about whether private parties economically injured by accidents at sea involving toxic wastes--catastrophic spills, for example--would have adequate legal remedies available to them.

The structure of the federal law is such that in the event of a catastrophe, the people most likely to be injured in their property or economic interests would face severe legal hurdles when seeking monetary compensation.

Let me take a Texas commercial shrimper as an example. A toxic waste spill could diminish or even wipe out his harvest by killing shrimp larvae or adult shrimp. Even if, through luck, shrimp populations were not decimated, the value of his harvest would plummet due to "reputational injury," because the public would not buy aquatic products from the Gulf of Mexico after a toxic waste contamination incident.

In theory, the shrimper could help clean up the spill and could claim for his costs, as long as his efforts were consistent with the National Contingency Plan. See section 107(a)(4)(B) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §9607 (a)(4)(B). But in practice it is doubtful he could afford to contribute to the cleanup effort. Moreover, the cleanup would almost certainly not lessen the degree of injury to his business.

So naturally he would seek a legal theory under which to sue the vessel and its owner for compensatory damages. His best hope would be the law of maritime tort. This is a body of federal common law that is supplemented by federal statutes.

The hypothetical shrimper would immediately be met by a claim by the vessel owner of limitation of or exoneration from liability under the Limitation of Shipowners Liability Act, 46 U.S.C. §183 et seq. This statute was passed in 1851 to aid American shipping interests. It has far outlived its usefulness, yet it remains on the books and is invoked routinely by American and foreign flag vessels alike.

The 1851 Act limits the liability of a vessel owner for tort claims to the value of the vessel and the freight charges owed it after the incident causing the injury. The exception is if the vessel was "unseaworthy" and the owner knew it.

The ordinary perils of the sea--including negligent navigation, which causes the great bulk of marine accidents--do not constitute unseaworthiness. So if the spill of wastes that injured the Texas shrimper was caused by human error, the owner's liability will be limited.

If after the incident--a collision, for example--the vessel still had a high value, then the shrimper would have some hope. But, if the collision started a fire that destroyed the vessel, or the vessel sank, then the shrimper would get his pro rata share of a very limited fund indeed.

The amount of insurance on the vessel or its owner would not change this result. First, "hull insurance" proceeds do not become part of the amount available to the shrimper. The ship owner gets the insurance money free and clear of tort claims.

Q: Will the residence time for PCBs be the same as required under the Toxic Substances Control Act (TSCA)?

A: The Toxic Substances Control Act (TSCA) regulations (40 CFR 761.70(a)(1)(i) and (ii)) stipulate a 2 second dwell time at 1200 °C (+ 100 °C) or a 1 1/2 second dwell time at 1600 °C (+ 100 °C). This TSCA provision was waived for the proposed Ocean Incineration Regulation because residence time, once a parameter felt to be of major significance in developing regulatory policy for both the land-based and oceanic incineration program, is currently overshadowed by the more important parameter of destruction efficiency. EPA formerly believed that residence times of 2 seconds or more were universally needed to achieve good destruction performance. The Agency now has an extensive data base which indicates that as little as tenths of one second may be sufficient in well designed incinerators for many kinds of materials. RCRA land-based incineration regulations do not have a residence time requirement and TSCA incineration regulations have a waiver provision which relies on destruction removal efficiency as the primary measure of incinerator performance.

EPA is currently reviewing public comments on its proposal to waive the TSCA residence time requirements. The Agency will then re-evaluate the merits of its original proposal.

Q.: Does the EPA see any need for a scrubber?

A: Scrubbers are required for land based operations for two reasons: (1) to neutralize acidic emissions, and (2) to remove metals from emissions. It does not appear that scrubbers are needed for at sea operations because the alkaline nature of ocean water will neutralize acidic emissions. The metals problem is minimized by limiting metal concentrations in the material to be burned.

EPA will be initiating a study to further address the question of whether open dispersal of the plume or use of a scrubber system will have less environmental effect.

Q: What would be involved in adding scrubbers to the stacks?

A: At least one potential permittee has proposed a design which incorporates sea water scrubbers for ocean incineration. The existing four vessels, (Vulcanus I and II and the Apollo I and II) could conceivably be retrofitted with wet scrubbers using sea water. This would be a major effort requiring the addition of major pieces of equipment such as large gas quenching chambers and large capacity pumps.

In addition, the scrubber effluent would have to be treated prior to its discharge. A single pass scrubber system with no treatment would be simple to operate but would concentrate the incineration combustion by-products in the discharge. Treating the scrubber effluent would reduce the discharges of combustion by-products but such treatment would require increasingly complicated and costly processes. Such treatment would require extensive equipment on-board the vessels, or on accompanying vessels, special personnel to operate the system and chemicals to treat the effluent. Depending on the level of treatment, such treatment of scrubber discharges would become impractical at sea.

Q: Would it be better to allow the plume to disperse rather than be quenched with these devices?

A: EPA has concluded that with the present anticipated number of incinerator ships, the dispersion of the constituents in the incinerator plume will not violate the water quality criteria or be a threat to human health. Water quality criteria are concentrations of a chemical that research has shown will not harm marine biota taking into account both the shortterm and long-term effects of the constituent. EPA will be initiating a feasibility study to address the question of whether open dispersion of the plume or use of a scrubber system will have less environmental effect.

QUESTION:

Q: The National Aeronautics and Space Administration (NASA) contracted with Atlantic Research Service for a demonstration of the use of the LARC (Light-Activated Reduction of Chemicals) process on PCBs in NASA transformers. Explain this process and its potential for addressing the increase in PCB wastes resulting from the ban on using PCBs in transformers.

A: The EPA is aware of Atlantic REsearch Corporation's (ARC) patented method for cleaning up of PCBs in dielectric fluids. The LARC process uses ultraviolet light and hydrogen bubbled through PCB containing liquid to replace chlorines on the PCB molecules with hydrogen. Reportedly, the reduced by-products can be recovered from fluids and disposed of fully or safely left in the dielectric fluids along with sodium chloride. EPA is aware that NASA had proposed testing of ARC's method at the Kennedy Space Center in 1983-1984. However, it is our understanding that the project was terminated, by mutual agreement, prior to completion.

QUESTION:

Supply the Committee with a list of all alternative technologies for PCB destruction, and their status.

ANSWER:

A complete listing of "all" possible or known alternative technologies for PCB destruction is an elaborate undertaking. However, two recent published articles give excellent summaries of these processes:

"Safe Disposal of Polychlorinated Biphenyls," D. Pilgrim, et al., IEEE 1982 IAS Conference Record, 1982.

"A Guide to EPA - Approved PCB Disposal Methods," L. Kokosqka and J. Flood, Chemical Engineering, July 1985.

Copies of these articles are attached.

THE SAFE DISPOSAL OF POLYCHLORINATED BIPHENYLS

D. Pilgrim[a], M. A. Thompson, and I. Webber[b]
RTE CORPORATION
1900 East North Street
Waukesha, Wisconsin 53186

Abstract

The degradation of polychlorinated biphenyls (PCBs) is reviewed in terms of the methods available and the reaction products generated. The origin of the PCB "problem" is discussed with reference to the toxic components of askarels.

The paper is organized into two sections (1) the disposal of askarel liquids and (2) the disposal of PCB contaminated liquid.

(1) PCBs require a very large energy input to cause decomposition and therefore, the methods in use are typically large energy sources. The most widely used method of disposal of pure PCBs, and that preferred by the EPA, is high temperature incineration. However, other methods discussed here include chemical methods and the use of a microwave plasma.

(2) In the case of liquids which are contaminated by PCBs, the first two disposal choices involve either destruction by a combustion method or disposal in a chemical waste landfill. However, it is sometimes possible to reclaim the liquid for re-use. This paper discusses the numerous alternative chemical methods of PCB destruction as well as the physical separation of PCBs to yield uncontaminated liquids.

Introduction

The stability and lack of reactivity of PCBs are benefits and at the same time, liabilities. Their thermal stability to oxidation and in the extreme case, combustion, and resistance to harsh chemicals such as strong acids, bases, oxidizing and reducing agents has made the removal of PCBs from electrical and other uses extremely difficult.

The PCB decontamination methods presently available fall into four major classes and are either physical, physico-chemical, chemical or biochemical. The literature concerning PCB treatment processes is expanding rapidly. This paper is not intended to be a complete review of every existing method, but rather is an overview of some of the more scientifically, and perhaps, commercially significant systems.

The Disposal of PCB Liquid

Figure (1) shows some of the disposal options available for undiluted askarel.

Chlorolysis

The chlorolysis of hydrocarbon wastes has been utilized on a large scale by Hoechst A. G.[1] The process involves the reaction of chlorine gas at pressures up to 25 MPa and temperatures up to 640°C with chlorohydrocarbon waste to yield carbon tetrachloride and hydrogen chloride. The generalized reaction is

$$C_x H_y Cl_z + \left(\frac{4x + y - z}{2}\right) Cl_2 \rightarrow x\, CCl_4 + y\, HCl$$

The process is primarily useful for aliphatic wastes rather than PCBs and in its unmodified form is limited in its application to feedstocks which contain approximately 5% aromatics. The reaction conditions necessary to treat undiluted PCBs may involve an increase in the process residence time or the use of a catalyst to allow efficient reaction.

Carbon tetrachloride and hydrogen chloride are marketable reaction products which can be conveniently separated from the processed feedstock by distillation. The mixture which remains is recycled to the reactor.

The chlorolysis reaction is exothermic and consequently reduces the process cost. However, due to the corrosive nature of the chemicals involved and the extreme reaction conditions, high purity nickel construction is required at a high capital cost.

Molten Salt

The molten salt process has been discussed during the past 25 years as a process which might be useful for coal degasification. Rockwell Energy Systems group has applied the principles of the process to the destruction of PCBs.[2] The PCB material is introduced at the bottom of a molten pool of sodium carbonate and decomposes during its rise to the surface. As the depth of the molten salt pool increases the efficiency of the process increases due to the increased residence time. PCB destruction in a 6-inch depth of molten salt was determined by Rockwell as a function of temperature using 53-65% excess air. The observed destruction efficiencies varied from 99.99917% at 754°C to 99.99971% at 912°C. It was pointed out that the deeper salt beds of commercial units would probably achieve higher destruction efficiencies due to the longer molten salt contact time.

The method involves a conversion of sodium carbonate to sodium chloride and therefore is not simply an incineration method for which EPA requires a 1200°-1600°C temperature. However, even when the pool had been completely converted to sodium chloride it was observed that PCB destruction continued.

The product gases were analyzed for CO, CO_2, HCl, Cl_2, and phosgene. It was found that less than 2ppm HCl was formed provided that 1-2% Na_2CO_3 remained in the melt. Less than 0.25 ppm of phosgene was detected and about 0.5 ppm of Cl_2 (or perhaps NO_x). The main gases formed are CO and CO_2.

An advantage of the system is that it can be made into a portable device capable of handling solid PCB waste. The system is however costly at an estimated $1.5 million for a 150 lb/hr unit designed for PCB liquids only without a solids handling capability. The solids handling equipment increases the equipment cost by about $250,000. The cost of operation of the process, once the capital cost is overcome, is low because the reaction exotherm provides heat and the only reagent expended is sodium carbonate.

Matrix Isolation

Perhaps the most imaginative disposal method applied to PCBs involves the blending of the liquid into a concrete mix as has been done at Dowling, Ontario. The PCB "rock" thus formed can be landfilled.

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Incineration

EPA research into the thermal degradation of PCBs has involved the use of commercial mixtures and pure isomers in a precisely controlled thermal environment. Temperature and residence time relationships were established in the range 300°-1000°C based upon the disappearance of PCB rather than the accumulation of decomposition products. It was concluded that with a 1 sec residence time, most of the degradation occurred within a narrow temperature range between 640°C and 740°C.[3] The lower molecular weight PCBs are less thermally stable than the higher molecular weight PCBs. The residence time of the molecules plays an important part in the overall efficiency of the degradation. Water and carbon dioxide are the main products of the combustion of organic material. Commercial incineration equipment does not always produce complete combustion and the effluent or residues can contain organic material of varying complexity which is derived from either incomplete combustion or thermal synthesis. Partial pyrolysis of PCBs results in the formation of polychloro dibenzo furans (PCDFs) with yields ranging from about 0.1% to 1%.[4] Morita, Nakagawa, and Rappe in 1978 observed that temperatures over 270°C were necessary for the transformation of PCBs to PCDFs but that prolonged heating over 300°C induces decomposition of the PCDF.[5] However, lab pyrolyses of PCBs have been done at temperatures up to 700°C with significant yields of PCDFs resulting from the short residence time in the high temperature zone. The chemistry of partial pyrolysis reactions is discussed later.

The partial pyrolysis of askarel in a transformer which becomes involved in a building fire has been shown to cause extremely expensive problems associated with the clean-up of soot contaminated with PCDFs and polychlorodibenzo-p-dioxins (PCDDs). Composite soot samples analyzed from the Binghamton PCB transformer fire have clearly shown the presence of extremely high levels of PCDFs, PCDDs and chlorinated biphenylenes.[6,7] The presence of PCDDs is probably the result of the partial pyrolysis of polychlorinated benzenes.

There is a wide variety of equipment available for the waste incineration of organic materials, but the suitability of the incinerator for refractory chlorinated compounds such as PCBs is restricted to those which allow the use of high temperatures and a suitably long residence time. A rotary kiln is usually large and expensive but does fulfill the required conditions. Such kilns are operated by Energy Systems Corporation in El Dorado, Arkansas and by Rollins in Deer Park, Texas.

Halogenated wastes can be used to fire cement kilns as has been done by the St. Lawrence Cement Co., in Mississauga, Ontario, and the Peerless Cement Co. in Detroit, Michigan. The calcium oxide of the cement reacts with the chlorine in the PCB to form calcium chloride. The resulting cement is not contaminated by organic material because the kiln operates at about 1500°C and the process has the advantage that some amount of chloride inparts beneficial mechanical properties to the cement.

Perhaps a disadvantage of the above systems is that they are operated on fixed land sites so that the PCB wastes must be transported to them through the surrounding communities. Offshore incineration is being proposed by Oceanic Combustion Services, a Chemical Waste Management Co., using a converted chemical tanker fitted with two large incinerators. At-Sea Incineration Co., of Greenwich, Connecticut, has also presented a plan to operate an incinerator ship out of Port Newark, New Jersey. Typically, the construction of such large scale facilities for the land-based support remains an issue. On a smaller scale, the Pyro-Magnetics Company, in Whitman, Maryland, has developed a high temperature, truck mounted incinerator, as has the EPA.

D. and D. Disposals Ltd., based in Smithville, Ontario, have experimented with six cylinder diesel engines mounted on a flatbed truck to burn PCBs. It is expected that a three engine system should be able to process about eight gallons of PCB per hour using an 80/20 blend of diesel fuel and PCBs. The Ontario Research Foundation has determined that the engine has a typical PCB destruction efficiency of 99.998% when the fuel is burned at about 590°C in the cylinder head. The cost estimate for each engine is about $300,000.

The plasma pyrolysis of refractory toxic wastes has been investigated by both Lockheed Aerospace and the Royal Military College in Kingston, Ontario.[8]

A plasma consists of both charged and neutral particles exhibiting collective behaviour with an overall charge of close to zero. A common method of plasma generation is electrical discharge through a gas. In the case of a plasma torch, the plasma is stabilized by collimation and resembles the heat source used for atomic emission spectroscopy. Arc temperatures can occur of up to 50,000°K and the material entering the plasma tends to become atomized and ionized. The overall efficiency of the process depends upon the conversion of the plasma electrical energy into thermal energy. Extensive work has been done to determine the conditions necessary to avoid the release of chlorinated organic compounds with molecular weights larger than tetrachlorobenzene.

Both Lockheed and the Royal Military College intend that their equipment should be mobile and that PCB destruction can take place on-site at a flow rate of about 1 gal./min. The estimated cost is about $300,000 per unit with electrical consumption of about 1.2 kWh/kg of feed. This is about one-tenth the energy cost of incineration.

Ozonolysis

Another disposal method under development at the Royal Military College, and also at the University of California, Riverside, uses ozone to oxidize PCBs. It was found that a six-to eight-fold excess of ozone was sufficient to produce a 90-95% destruction of PCBs. Thus, 100 lb of PCBs would require approximately 100 lb of ozone and hence about 1000 kWh of electricity would be needed. The process is therefore not likely to be as cost competitive as high temperature incineration but it may be useful for the destruction of PCBs diluted in the environment. The application of the ozonolysis reaction to PCB contaminated waters is discussed later.

The Disposal of PCB Contaminated Liquid

The disposal options for PCB contaminated liquids are charted in Figure (2).

PCB contaminated oils may be destroyed in the same way as pure PCBs but, in addition, the EPA has granted approval for some companies to destroy their own low-level PCB contaminated oils in boilers. The disadvantage of the process is that it does not only destroy the PCB but also the transformer oil.

Because of the increasing short supply of base stocks suitable for use as electrical transformer fluids it is becoming increasingly required to reuse the liquid.

Physical processing methods are less likely to result in detrimental changes to the properties of transformer oils than are chemical destruction methods.

Adsorption

The preferential removal of PCBs by adsorption from a contaminated system depends upon a large number of factors. RTE has done a study of the equilibrium concentrations of PCBs between transformer oil and transformer solid materials.[9] For a typical 500 kVA transformer about 97.5% of PCBs are not adsorbed; only 2.5% of the PCBs are unevenly distributed among papers, core steel, and Formvar wire. Among these solid materials, papers adsorb a majority of the PCBs. A complication of the measurements, however, is that, with paper, some of the PCBs are not only adsorbed but also absorbed. Thus, while an oil temperature fluctuation between 50°C and 110°C causes a maximum shift of 0.6% PCB concentration when only adsorption/desorption is measured there can be a substantially larger effect when a thin layer of paper is involved because capillary action can produce substantial impregnation.

There are two filtration systems in use today for the removal of PCBs from contaminated fluids: the EPAC system for hydrocarbons and activated charcoal for silicones. The EPAC system, developed by RTE Corporation, contains neoprene as an adsorption/absorption medium. From a physico-chemical standpoint, the adsorption system must overcome the competition within the solution of different compounds for adsorption sites. In other words, the PCB molecule must be more strongly bonded to the surface than any other molecule in solution at a similar or larger concentration for the system to work optimally. Thus the overall efficiency of PCB removal from contaminated oil will depend upon such factors as the aromaticity of the oil and the oxidation products contained in it. Perhaps the greatest disadvantage of adsorption systems, such as the EPAC, which are mounted on the operating transformer, is its speed of operation. The rate of PCB reduction is partly governed by the recirculation of the oil and partly by the adsorption/desorption process itself.

Distillation and Extraction

The separation by distillation of transformer oil and askarels has been investigated by Battelle-Columbus Laboratories and D. & D. Disposal, Inc. The difficulty in the method lies in the overlap of the boiling range of the components. Since the PCBs are typically higher boiling than most mineral oil components, conventional distillation requires that most of the fluid be distilled before the PCBs can be separated as a residue.

Steam stripping is an alternative to vacuum distillation and separations can be achieved at atmospheric pressure at temperatures which do not cause thermal degradation. This method shares the disadvantage of conventional distillation that many components exhibit overlapping boiling ranges.

The addition to the PCB in oil system of an agent capable of forming a low boiling azeotrope is being investigated. In this case, the separation can be accomplished by distilling a small quantity of azeotrope rather than a large quantity of transformer oil.

Liquid/liquid extraction of PCBs from transformer oil has been investigated by Oak Ridge National Laboratory using furfural as a solvent. The Franklin Research Institute has reported a study in which measurements were made of the partition coefficients of PCBs in a range of potential solvents while General Electric has done some work on supercritical fluid - liquid extraction and also liquid-liquid extraction. The difficulties encountered with these methods may outweigh their potential advantages in the treatment of transformer oils. It does not seem likely that the solutions offered by physical methods will compete favourably with those offered by chemical destruction systems.

Reactions of Alkali Metals and Alkali Metal Organometallic Reagents

In cases where it may not be economical to reuse the decontaminated oil chemical processes can be used to yeild a detoxified product which still has thermal value as fuel. The first large scale chemical process was developed by Goodyear using known reactions of halogenated aromatics applied to heat transfer fluids containing up to about 120 ppm of PCBs.[10] The reagent which Goodyear chose to investigate, sodium naphthalenide (NaNp), has been known for many years to react rapidly with strongly bonded organic halogen compounds such as chlorobenzene. The application of NaNp to the treatment of PCBs was made by Japanese workers in 1978.[11] Smith and Bubbar at the University of Waterloo, Ontario, worked on the application of NaNp to contaminated transformer oils as a research project for the Canadian Electrical Association.[12] Acurex Waste Technologies, Inc. use a similar process but because naphthalene is a priority pollutant, they have replaced it with a chemically similar, proprietary alternative.

Sodium naphthalenide is a dark green, air unstable reagent prepared by mixing metallic sodium with naphthalene in dry tetrahydrofuran solution and heating under a nitrogen atmosphere. The derivative reacts with PCBs to form chloride, biphenyl, and polyphenyls with a yeild, based on chloride, of about 99.5%. 60-75% of the naphthalene can be recovered from the reaction to reduce the cost of the reagent on a large scale. Interestingly, the efficiency of the dechlorination was found to be improved when the recovery of naphthalene was increased. Thus, the recovered material contains an impurity produced from a side reaction which acts as an inhibitor to either the formation of the NaNp reagent or the dechlorination reaction.[13]

Analysis of some of the non-chlorinated polymeric, aromatic reaction residue indicates that one solvent tetrahydrofuran molecule is associated with each aromatic ring.

The large scale process developed by Goodyear was intended to yield a decontaminated fuel. The Acurex batch process yeilds a decontaminated oil which is filtered and returned to the customer for reuse or disposal although the extent of further refinement is uncertain.[14] Smith and Bubbar are proposing a continuous system which, it is claimed, can be built into a protable unit that could be carried on a trailer for on-site processing to yield a dielectrically acceptable oil.

Many of the chemical decontamination systems which have been developed involve very simple organometallic reactions based upon the transfer of electrons from an alkali-metal such as sodium or an alkali-metal organometallic reagent to the PCB molecule. The details of the reactions such as the air and moisture sensitivity of the reagent, side reactions to give partially dechlorinated toxic products, chemical reactions with oxidation inhibitors and oil components, usually constitute proprietary information. The amount of analytical work required to elucidate the details of reactions is both costly and necessary to obtain an understanding of the usefulness of the process.

Ohio's PCBX process is mounted in a forty foot ailer accompanied by an auxiliary trailer containing covery and test equipment. The chemistry involved n the process has not been disclosed. It is known hat the process is continuous, as opposed to a batch operation, and that the oil is pumped from the transformer or storage tank, through a heater to a reaction chamber where a reagent is metered into the oil stream. The mix is then passed through a recovery system containing heat exchangers, filters, a centrifuge and vacuum degassing apparatus. The oxidation stabilities of the treated oils were reported to have been unchanged when measured by ASTM D2440 and a low temperature modified version of the ASTM rotating bomb oxidation test, D2112.[15] It is a matter of conjecture from their published results that oxidation inhibitor might be removed by the reagent. While this has not been explicitly stated, it would not be surprising based upon the chemistry of alkali metal/organic reagents. The process may involve the subsequent addition of oxidation inhibitor but, in any case, in-depth oil quality research is being undertaken by SunOhio while at the same time evaluating some of the transformers which have been filled with processed oil.

The cost of the PCBX trailers is high, at about \$500,000, but the process is apparently capable of treating a wide range of PCB concentrations in transformer oils at flow rates of up to several gallons per minute. The overall cost of the process is dependent upon the original PCB concentration in the oil.

Limited research has been done on the application of sodium metal in liquid ammonia to PCBs in insulating oils. The results which have been obtained from testing on chlorinated pesticides and the reduction of aromatic compounds[16] indicate that such a reaction might also be applicable for PCBs. The reaction of chlorobenzene with sodium in liquid ammonia yields mainly benzene and a trace of cyclohexene and aniline.

Vertac Chemical Corporation is a manufacturer of agricultural chemicals and has researched and patented a method for the destruction of PCDDs.[17] The PCDDs are formed in side reactions during the product synthesis. The applicability of the method to the removal of other toxic chlorinated aromatic compounds such as PCBs is obvious.

The reaction used is one in which the PCDD or PCB reacts with alkali metal alcoholates of short chain alkanols or polyalkoxyalkane glycols or with alkali metal hydroxides. The process can be made to take place at about 140°-220°C at atmoshperic pressure when sodium ethylene glycolate is used. The alkali metal alocholate can be produced by reacting an aqueous solution of an alkali metal hydroxide with the glycol. The dechlorination of tetrachloro dibenzo-p-dioxin (TCDD) is represented by the following equations:

$$\mathrm{TCDD} + 4\ \mathrm{NaOC_2H_4OH} \longrightarrow$$
$$\mathrm{(OC_2H_4OH)_4}\ \text{dibenzo-p-dioxin} + 4\ \mathrm{NaCl}$$
$$\longrightarrow \mathrm{(NaO)_4}\ \text{dibenzo-p-dioxin}$$
$$+\ 4\mathrm{(HOC_2H_4)_2O}$$

Workers at General Electric have found similar results. Brunelle and Singleton have reported the reaction between potassium hydroxide, polyethylene glycol (PEG) and PCBs.[18] These authors found that complete removal of up to 1% PCBs in transformer oil occurred in less than two hours at 100°C. The advantage of this system over those containing alkali metal organometallic reagents is that it is not moisture or air sensitive.

The Franklin Institute NaPEG process consists of the following steps:[19]

1. Reagent preparation

   (A) $\mathrm{Na + PEG \longrightarrow NaO(PEG) + H_2}$

   (B) $\mathrm{NaO(PEG) + O_2 \longrightarrow}$ NaPEG reagent

2. Dechlorination

   $\mathrm{NaPEG + PCB} \xrightarrow{\text{air}}$ dechlorinated products

The treated oil can be pink in color, possibly indicating the presence of quinoidal compounds produced by reaction with oxidation inhibitor. Other reaction products are sodium chloride and polyhydroxybiphenyls. The process is still under development and has been utilized on the large scale in a joint venture between the Franklin Institute and Philadelphia Electric.

The use of sodium dispersions for the removal of halogenated compounds from hydrocarbon oils has been used as a refining method for many years. The application of the reaction to PCBs was described as early as 1973 by Japanese workers who used it to decontaminate kerosene employed as a solvent for PCBs extracted from sewage sludge.

The B. C. Hydro process for the dechlorination of PCBs utilizes an alkali metal such as sodium dispersed directly into the contaminated oil.[20] The rate of reaction is sensitive to the particle size of the dispersion and temperature as well as the presence of oxidation inhibitors.[21,22] However, the process is cost effective and yields a dielectric quality product. A disadvantage of the system is that excess alkali metal is very reactive and needs to be treated cautiously. The reaction yields a non-chlorinated polyphenyl sludge similar to that of the PCBX process.

Ontario Hydro has developed the laboratory scale reactions performed at B. C. Hydro and has had success in treating considerable volumes of contaminated oil to give reusable product. B. C. Hydro has been awarded a CEA reserach grant to investigate the large scale application of the reaction.

Radiation

The Westgate Research Corporation in Los Angeles, California has developed the Ultrox process which involves the UV catalyzed ozone oxidation of chlorinated organics in industrial waters. Hydroxyl radicals are frequently proposed as the reactive species in the UV-ozonation of organic compounds. However, according to Leitis, Zeff, Smith and Crosby,[24] the experimental data obtained with the Ultrox system indicates that the major oxidizing species in the $\mathrm{UV/O_3}$ oxidation is ozone itself. Carbon-halogen bonds are broken before other structures are oxidized and the halogen atoms appear in solution as halide ions. A several-fold synergistic effect of ozone and UV light has been observed. The magnitude of the effect is greater at low (1 ppm) than at high (100 ppm) concentrations of the contaminant to be oxidized. It is postulated that the oxidation of chlorobenzene proceeds as follows:

Chlorobenzene $\xrightarrow{\mathrm{UV/O_3}}$ chlorophenol
$\longrightarrow$ mixture of (chloro)catechol + (chloro)resorcinol +
(chloro) hydroxyquinone
$\longrightarrow$ trihydroxyl (chloro) benzenes $\longrightarrow$ (chloro)muconic acids
$\longrightarrow$ maleic aldehyde + glyoxylic acid
$\longrightarrow$ oxalic acid $\longrightarrow \mathrm{CO_2 + H_2O}$

The Atlantic Research Corporation in Alexandria, Virginia has experimented with a UV/H_2 gas system to dechlorinate PCBs and is testing a field unit for the decontamination of oils.

The Wetox Hydrothermal oxidation process has been developed by the Ontario Research Foundation. The organic material to be destroyed is wet air oxidized in the presence of water. PCB destruction efficiencies of about 99.99% have been achieved with PCB concentrations of 600 mg/L when the reaction is operated at temperatures of 250°C and oxygen pressures of 4.8 MPa.

The gamma-ray radiolysis of halogenated benzenes was investigated by Choi and Willard[25] in 1962 using a very strong Co^{60} source. They found that many similarities existed between the UV photolysis reactions and those initiated by gamma rays. The work was applied in 1971 to an environmentally persistant pesticide, DDT, and in the following year Arai, Matsui, Moriguchi, and Imamura[26] applied the method to solutions of PCBs.

The radiolysis dechlorination reaction is in many ways similar to the mechanism of dechlorination by organometallic reagents. It is illustrated by an electron generated in the solution by interaction of a high energy gamma-ray with, in this case, a solvent molecule. The solvated electrons have a very high affinity for atoms such as chlorine and abstract them from the PCB molecule as chloride. This reaction leaves the original PCB in a highly reactive "free radical" state with one chlorine less than it had originally. A so-called cascade chain reaction then occurs and the PCB stabilizes itself by eliminating more chlorine as chloride until it eventually reaches a stable configuration, for example, as biphenyl or a polymeric biphenyl chain.

The use of electrons accelerated by a Van de Graff generator to dechlorinate PCBs has been investigated by Merrill, Mabry, Schulz, Coleman, Trump and Wright[27] at MIT. Their primary interest was in the effect of high energy electron irradiation on the persistent toxic trace components in sludges and wastewater. It was found that in pure hexane solution, very little reaction was observed while in aqueous systems, the PCB became hydroxylated.

Non-halogenated hydrocarbons, such as aliphatics, biphenyls, and other typical oil components, are resistant to breakdown by radiation and therefore a Canadian Electrical Association contract was initiated to investigate the possibility of decontaminating electrical insulating oils using beta-particles (2 MeV electrons) from a radioactive Sr^{90} source.[28] Experiments were conducted at Simon Fraser University using different combinations of PCBs in transformer oil, isopropanol, potassium hydroxide, and air. It was found that very large doses were required for complete dechlorination. The PCB mixtures were destroyed most efficiently in the case that the solution was free of oxygen and contained an alkaline hydrogen donor to allow a chain reaction to take place.

Bacteriological

The biologically induced decomposition of PCBs has been investigated by the Canada Centre for Inland Waters in Hamilton, Ontario and also by Polybac Corporation of Allentown, Pennsylvania.

A number of strains of bacteria have been discovered that can metabolize PCBs. These represent five genus Acetobacter, Acinetobacter, Alcaligenes, Klebsiella, and Pseudomonas.[29] The bacteria are found in river sediments and their activity seems to be enhanced by the use of surfactants. The decontamination of water samples has been shown to be possible from about 300,000 ppb to 19 ppb using strains such as Acinetobacter. This particular strain is also found to eat the oil as well as the PCBs.

The attractive features of the method are that, firstly the bacteria are relatively harmless if well controlled, secondly, the uptake of PCB is fast, and thirdly, products, such as chlorobenzoic acid, are easily removed and non-toxic.

The Polybac Corporation study is currently under investigation. It is aimed at the in situ decontamination of transformer oil spills containing PCBs using a blend of different strains of bacteria. Experiments are being conducted on spills of about 3000 ppm PCB although it is expected that the system will work at higher concentrations.

The process involves the application of a proprietary bacterial blend to the spill plus biodegradable emulsifiers and nutrients. The pH of the system is then adjusted and the treatment is repeated weekly. A drop of 50-75% of the original PCB concentration in the field trial is expected in six to eight weeks with a final concentration of less than 1 ppm. The degradation products of the reaction have not been investigated. Unlike those systems involving alkali metal or alkali metal organometallic reagents, the dechlorination of the PCB takes place by degrading the lower chlorinated isomers before the more highly chlorinated components.

Electrochemical

Envirogenics Systems Corporation have successfully used electrochemical reduction for the decontamination of waste waters. The water is passed at ambient temperature and neutral pH over a bed of sand and copper coated iron particles. The exact reaction mechanism is unknown, as are the identities of all the end products, but it is known that chloride is one of them.

J. Rusling, at the University of Connecticut, is currently investigating a non-aqueous electrochemical method of PCB dechlorination which involves the formation of anion radicals at a Hg electrode surface. The method, known as Controlled Potential Electrolysis, produces radical anions of such compounds as anthracene, 9,10-diphenyl-anthracene and phthalonitrile in DMF solution. The radical anions stablize themselves by reacting with PCB molecules to produce chloride in much the same way as an organometallic reagent. Stepwise reduction of the PCB is observed with biphenyl as an end product.

Uncontrolled Reactions

The extent of uncontrolled reactions in processes which are intended to decontaminate PCB solutions are of considerable importance because of the extreme toxicity shown in laboratory animal studies of partial oxidation products of PCBs such as PCDFs and PCDDs. These compounds can be produced by heating askarels in the presence of oxygen or by the cyclization of hydroxylated precursors.[30-33] Uncontrolled reactions during the industrial preparation of trichlorophenol from tetrachloro benzene and sodium hydroxide in ethylene glycol have resulted in severe accidents on at least six different occasions. The Seveso incident, which occurred in 1976 is probably the best known.

The ethylene glycol used as solvent in this reaction undergoes an exothermic base catalyzed polymerization

ve about 180°C and the occurrence of this uncontrol-
d reaction can result in the formation of TCDD.

The formation of hydroxylated products during the electron irradiation of askarel contaminated oils containing a source of hydroxyl radicals, such as potassium hydroxide or water, is potentially dangerous because of the formation of polychlorinated biphenyl ethers.

If the reaction conditions in a process can yeild chlorophenols as a side reaction product as in, for example, the partial pyrolysis of chlorobenzenes, it is not unlikely that the reaction conditions will cause the production of PCDFs and PCDDs.

PCDFs and PCDDs can be formed from chlorophenols in three different ways.

(1) The dimerization of chlorophenates.

(2) The cyclization of polychlorinated diphenyl esters (PCDPEs).

(3) The cyclization of polychlorinated phenoxy phenols termed "pre-dioxins".

The dimerization of chlorophenates is likely to be bimolecular and therefore the products formed under given conditions should be highly dependent upon the chlorophenate concentrations. The PCDD isomers formed will depend upon the relative kinetics of the alternative reaction routes.

The pyrolysis of PCDPEs follows two competitive reaction pathways viz , reductive dechlorination or ring closure to dibenzofurans.

The cyclization of pre-dioxins is a bimolecular reaction caused by heating. The final concentration of dioxins should ultimately be dependent upon the concentration of polychlorinated phenols which are formed.

The pyrolysis of PCBs to PCDFs occurs intramolecularly by four different reaction routes to yield different isomeric PCDF products. The overall effect of radical reactions on the product distribution in a system will be effected by both temperature and the availability of oxygen or oxygen containing species. It would be ironic if a process aimed at the decontamination of fluids containing PCBs, which have been shown to be for the most part non-toxic, should inadvertently create a problem as the result of uncontrolled side reactions to products with a much greater apparent toxicity.

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PROCESS TECHNOLOGY

A guide to EPA-approved PCB disposal methods

New techniques for destroying polychlorinated biphenyls (PCBs) are increasing the availability of disposal capacity and changing the way industry is handling the toxic chemicals. Revised approval procedures for these methods are also enabling the U.S. Environmental Protection Agency (EPA) to unify its approach to PCB disposal.

L. Kokoszka, Nepera Chemical Co., and **J. Rood**, Environmental Protection Agency

Since the PCB Disposal and Marking Rule came into effect less than eight years ago, various types of processes — including high-temperature incinerators, high-efficiency boilers, landfills, and alternative methods — have been granted EPA approval for safely disposing of PCBs. Presently, about 60 approved PCB-disposal facilities employing these techniques are in operation in the U.S. (see Table I).

Of these different methods, particularly noteworthy advances are being made in alternative PCB-destruction techniques, such as chemical dechlorination, mechanical shredding plus solvent extraction, and thermal and biological treatment. Indeed, the number of alternative processes approved by EPA has risen sharply in recent years, this trend coinciding with industry's heightened interest in mobile PCB-disposal systems. These mobile units come to an area for a specific period of time to destroy a finite amount of PCB material before moving on to a different location to perform another job. Disposal in this manner reduces exposure risks by virtually eliminating the storage and transportation of PCBs.

To enable users to benefit from these new technologies, EPA has simplified its procedure for obtaining nationwide approval to use a particular process. In March 1983, EPA issued a procedural amendment to the PCB Rule, entrusting the Office of Pesticides and Toxic Substances (OPTS) with the authority to review and issue such approvals (i.e., approvals that will be effective in all ten EPA regions) for mobile and other PCB-disposal facilities that can be used in more than one region. The purpose of the amendment is to eliminate duplication of effort in the ten regional offices and to unify the agency's approach to PCB disposal. In order to expedite the permit-review process even more, the Assistant Administrator of OPTS in January 1984 delegated this approval authority to the Director of the Office of Toxic Substances (OTS).

Furthermore, permission to use PCBs in hydraulic fluids and heat-transfer fluid systems (heat exchangers, for example) in concentrations above 50 ppm expired on July 1, 1984. In addition, PCB use-authorizations — under Section 761.30 of the PCB Rule — for PCB transformers and large capacitors near food or feed in unrestricted areas, require that the former be removed from service by Oct. 1, 1985, and the latter by Oct. 1, 1988. Further information on initiating PCB-disposal activities in these areas may be obtained by contacting EPA's TSCA (Toxic Substances Control Act) Assistance Office at the following toll-free telephone number: 800-424-9065.

ONGOING PROBLEM — Although PCBs have long been known to be toxic, only in recent years have they been acknowledged to be a general threat to the environment. The chemicals have been found in measurable concentrations in waterways and sediments throughout the world and are widely spread contaminants of fish and wildlife resources. Extensive research has shown a link between PCBs and chronic (longterm) effects in many species at less than 10 ppm. There are well-documented tests on laboratory animals that show that PCBs cause developmental toxicity, reproduction abnormalities, and tumors.

But because their properties make them useful as a dielectric fluid, PCBs have been widely used in transformers and capacitors; until 1972, they were also produced for use in hydraulic and heat-transfer fluid systems because of their stability and heat resistance.

Although the chemicals may be produced naturally in the environment, almost all PCBs in existence today are synthetic in origin: Since their introduction in 1929, about 1 million tons of PCBs have been manufactured in the U.S., and factories elsewhere in the world are estimated to have produced an equal amount. In 1979, when their production was banned in the U.S., EPA estimated that about 750 million lb of PCBs were in use and that another 20 million lb were in storage awaiting safe disposal.

Besides toxicity, PCBs also pose a disposal problem because they are some of the most degradation-resistant organic compounds known. A May 1972 report by the President's Council on Environmental Quality recommended that the U.S. Congress enact the Toxic Substances Control Act to provide the regulatory authority to deal with toxic chemicals, including PCBs. In 1976, the Congress passed TSCA, Section 6(e) of which requires among other things that the EPA promulgate rules for the disposal of PCBs. To meet the Section 6(e) mandate, EPA promulgated the PCB Disposal and Marking Rule on Feb. 17, 1978.

APPROVED METHODS — Early on, EPA recognized that one of the key prerequisites for successfully implementing its PCB-disposal rules was the availability of adequate disposal technology. Much of EPA's efforts have been directed toward establishing adequate PCB-disposal capacity in the private sector. This has been done through the agency's drawing up of technical standards for PCB disposal and by the development of procedures for obtaining approval under those standards. (The agency also recognizes that control of existing and new manufacturing processes is equally important, and has established rules to regulate these activities.)

EPA's PCB disposal rules typically require that various types of PCBs and PCB articles be disposed of in chemical-waste landfills or destroyed in high-temperature incinerators or high-efficiency boilers. The disposal rules, published in the July 1984 *Code of Federal Regulations* — 40CFR, Part 761 — are summarized in Table II.

In addition, EPA's rules permit users to obtain approval for alternative methods that can achieve a level of performance equivalent to EPA-approved incinerators or high-efficiency boilers. Under the regulations, many factors are used to determine the approximate equivalence goals for alternative PCB-disposal methods. For example, although the mathematically calculated PCB-destruction efficiency of the alternative methods may be less than that achieved by an EPA-approved incinerator or high-efficiency boiler, this can be offset by such factors as the absence of detectable PCB emissions.

The incinerators are generally liquid-injection and rotary-kiln types, typically operating at temperatures of around 2,000°F. The high-efficiency boilers consist of gas-, coal- and oil-fired units. The majority of the approved incinerators and boilers are for in-house use only and do not operate commercially. The exceptions include those of: Energy Systems Co. (ENSCO); EPA's Office of Research and Development; General

Table I — The following processes have EPA approval to operate in specific regions

Company	System type	Location	Region
Incinerator			
Aluminum Co. of America	Liquid injection	Davenport, Iowa	7
Dow Chemical Co.	"	Freeport, Tex.	6
	"	Oyster Creek, Tex.	6
	"	Plaquemine, La.	6
Energy Systems Co.	Rotary kiln/ liquid injection	El Dorado, Ark.	6
EPA Office of Research and Development	"	Mobile	2
General Electric Co.	Liquid injection	Pittsfield, Mass.	1
	Rotary kiln	Waterford, N.Y.	2
LaPorte Chemical Corp.	Liquid injection	Pasadena, Tex.	6
Los Alamos Scientific	Kiln	Los Alamos, N.Mex.	6
Pyrotech Systems, Inc.	"	Mobile	1,4,5,7,6
Rollins Environmental Services, Inc.	Rotary kiln/ liquid injection	Deer Park, Tex.	6
SCA Chemical Services, Inc.	"	Chicago, Ill.	5
Tennessee Eastman Co.	Liquid injection	Kingsport, Tenn.	4
Vulcan Materials Co.	"	Geismar, La.	6
High-efficiency boilers			
Baltimore Gas & Electric	Coal-fired	Chase, Md.	3
Carolina Power & Light	"	Moncure, N.C.	4
City Public Service Co. of San Antonio	Oil/gas-fired	San Antonio, Tex.	6
Diamond Shamrock Corp.	"	Sunray, Tex.	6
Duke Power Co.	Coal-fired	Riverbend Station, N.C.	4
General Motors Corp.	Oil-fired	Bay City, Mich.	5
Hoosier Energy, Inc.	Coal-fired	Bloomington, Ind.	5
Houston Lighting & Power	Oil/gas-fired	Houston, Tex.	6
Louisville Gas & Electric	Coal-fired	Louisville, Ky.	4
Northeast Utilities	Oil-fired	Middletown, Conn.	1
Northern States Power Co.	Coal-fired	Minneapolis, Minn.	5
Otter Tail Power Co.	"	Fergus Falls, Minn.	5
Potomac Electric & Power Co.	"	Morgantown, Md.	3
South Carolina Electric & Gas	"	Lexington, S.C.	4
Tennessee Eastman Co.	"	Kingsport, Tenn.	4
Tennessee Valley Authority	"	Bridgeport, Ala.	4
Union Electric Co.	"	St. Louis, Mo.	7
Washington Water Power Co.	Oil-fired	Spokane, Wash.	10
Chemical methods			
Acurex Corp.	Dechlorination	Mobile	1-10
Chemical Decontamination	"	Mobile, Birdsboro, Pa.	1-10
Environmental International, Inc.	"	Mobile	7,8
Franklin Institute/ Philadelphia Electric Co.	"	Mobile, Philadelphia, Pa.	3,6,8
General Electric Co.	"	Mobile, Philadelphia, Pa.	3,6,8
PCB Treatment Inc.	"	Kansas City, Mo.	7
PPM, Inc.	"	Mobile, Kansas City, Kan.; Overland Park, Kan.; Atlanta, Ga.	1-8
Rose Chemical Co.	"	Holden, Mo.	7
SunOhio Co.	"	Mobile	1-10
T&R Electric Supply Co.	"	Coleman, S.Dak.	8
Transformer Consultants	"	Mobile, Akron, Ohio	1-8
Landfills*			
Casmalia Disposal		Santa Barbara, Calif.	9
CECOS		Niagara Falls, N.Y.	2
		Williamsburg, Ohio	5
Chemical Security Systems, Inc.		Arlington, Ore.	10
Chemical Waste Management		Emelle, Ala.	4
		Kettleman Hills, Calif.	9

Company	System type	Location	Region
Envirosafe Services of Idaho, Inc.		Grandview, Idaho	10
SCA Chemical Services, Inc.		Model City, N.Y.	2
U.S. Ecology		Beatty, Nev.	9
Mechanical shredding with extraction			
Environmental International Electrical Services, Inc.		Kansas City, Kan.	7
Rose Chemical Co.		Holden, Mo.	7
SED		Greensboro, N.C.	4
Biological methods			
Detox Industries		Houston, Tex.	6
Alternate thermal methods			
J.M. Huber Corp.		Borger, Tex.	6

*Does not include one-time authorizations.

Table II — EPA's current regulations for disposing of various PCB materials

Applicable item	Method		
	Incineration	Chemical-waste landfill	Alternative
Liquid PCBs (includes mineral-oil dielectric fluid from PCB-contaminated liquids at concentrations between 50-500 ppm)	Acceptable	Acceptable if information is provided showing PCB level is not above 500 ppm, and if liquid is not an ignitable waste and is containerized or stabilized	High-efficiency boiler that meets required criteria, or alternative disposal method approved by the R.A.* or A.A.**
Liquid PCBs (concentrations above 500 ppm)	Acceptable	Not acceptable	Alternative disposal method approved by R.A. or A.A.
Nonliquid PCBs (contaminated soil, rags, and other debris)	Acceptable	Acceptable	None
Municipal sewage, treatment sludge and dredged materials	Acceptable	Acceptable	Alternative method approved by the R.A.
PCB transformers	Acceptable	Acceptable if drained, filled with solvent, allowed to stand for 18 h, and then drained	None
Large high- or low-voltage PCB capacitors	Acceptable	Not acceptable	None
Small PCB capacitors (owned by manufacturers of PCB capacitors or PCB equipment and acquired in the course of such manufacturing)	Acceptable	Not acceptable	None
Small PCB capacitors (other than the above)	Acceptable	Acceptable	Municipal solid waste
PCB hydraulic machines (if drained of freeflowing fluid)	Acceptable	Acceptable	Municipal solid waste
Other PCB articles	Acceptable	Acceptable if freeflowing liquid is drained prior to disposal	None
PCB containers (not decontaminated)	Acceptable	Acceptable if liquid PCBs are drained	None
PCB containers (containing only PCBs at concentrations below 500 ppm)	Acceptable	Acceptable	Municipal solid waste if liquid PCBs are drained
PCB containers (decontaminated)	Acceptable	Acceptable	Reuse or municipal solid waste

*EPA Regional Administrator
**EPA Assistant Administrator

Electric Co.; Pyrotech Systems, Inc.; Rollins Environmental Services, Inc.; and SCA Chemical Services, Inc.

All the approved landfills and alternative PCB-destruction methods (except that of J. M. Huber Corp.) are commercially operated. Chemical dechlorination generally involves using such strong reagents as sodium glycolate or sodium naphthalene to strip the chlorine from the PCBs, converting them into nontoxic byproducts. Mechanical shredding and solvent extraction involves the removal of dielectric fluids and core materials from PCB transformer and capacitor metal casings, shredding the casings, rinsing them with solvent to remove PCBs, and distilling the solvent for reuse.

Biological techniques use cultivated bacterial strains to consume PCBs and convert them into nontoxic residues. Alternative thermal methods, such as high-temperature fluid-wall reactors, use radiant energy from carbon electrodes to generate temperatures in excess of 4,000°F for destroying PCBs.

In addition, a large number of researchers are currently pursuing other, more innovative solutions to the problem of PCB disposal using a wide range of techniques, including light-activated reduction, catalytic decomposition, and a variety of thermal destruction methods other than conventional incineration.

***J. Chowdhury**, Editor*

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QUESTION:

One of EPA justifications for the need for incineration-at-sea is that supposedly land-based PCB incinerators are operating to capacity. Yet EPA has also reported that many of the industrial boilers in the U.S. could be used to dispose of PCBs. Explain your experience with PCB destruction at the Bay City, Michigan, General Motors plant. How many industrial boilers in the United States could burn PCBs? How much would this add to present incinerator capacity? Would use of industrial boilers lessen the need for incineration-at-sea?

ANSWER:

Although it is true that many of the industrial boilers in the United States could theoretically be used to dispose of PCB's, it is unlikely that largescale use of boilers for PCB destruction will occur; and, furthermore, any such boiler use would not, in fact, lessen the need for incineration-at-sea.

Existing PCB thermal destruction regulations permit the use of industrial boilers for PCB destruction only when the PCB's being destroyed are at a concentration of 50 to 500 parts per million (ppm) and when the boiler being used can achieve destruction and removal efficiencies (DRE's) in excess of 99.9%. For PCB's in concentrations greater than 500 ppm, incinerators must be used and these incinerators must be capable of achieving DRE's in excess of 99.9999%.

EPA studies have shown that larger industrial boilers have the potential to destroy PCB's at a concentration of 50 ppm to 500 ppm to a destruction rate of greater than 99.99%. The EPA and General Motors cooperated in a series of test burns on a high efficiency industrial boiler owned by General Motors at Bay City, Michigan in May of 1980. The subject test series was one of several conducted around the County to determine if large boilers could successfully destroy PCB-contaminated waste oils. The tests confirmed that the PCB's were destroyed at destruction and removal efficiences (DRE's) in excess of 99.99 percent. These tests confirmed other reported tests that such DRE's were obtainable. A report on the work stated, "On the basis of the data presented here, the use of on-site high efficiency boilers for the disposal of this fluid is a viable alternative to landfilling."

A national boiler inventory, carried out by EPA, indicated that there are more than 40,000 of these larger industrial boilers in the United States. However, it is important to note that, of the 40,000 boilers, only an estimated 1,300 are currently burning wastes and these wastes are mostly non-chlorinated wastes. Since burning highly chlorinated wastes such as PCBs can cause extensive corrosion, it is very unlikely that there would be a wholesale acceptance by boiler owners of burning the wastes as fuel in their boilers.

It should be kept in mind that incinerating PCBs in a boiler would for all practical purposes be an option only for those PCB waste generators that have such a boiler. Boiler owners would be extremely reluctant to take PCBs from other companies since, under proposed regulations, this would cause their boiler to be regulated as treatment, storage, and destruction facilities and would significantly diminish the economic attractiveness of using wastes as fuel in the boilers. Further, boilers would need to be designed and constructed with proper materials of construction to prevent the corrosiveness of these halogenated wastes.

In summary, the use of industrial boilers would not lessen the need for incineration at sea. Whatever use that boilers are put to for destruction of PCB's with concentrations in the 50 ppm to 500 ppm will not affect the need for new incineration capability for the PCB's in concentrations greater than 500 ppm.

Q: In sampling at the incineration site, what organisms will be used in the bioassays?

A: During the proposed research burns, emissions from the incinerator will be drawn through a sampling system which absorbs the emission constituents into seawater. This seawater is then used in bioassays including: juvenile fish survival, growth and pathology; mysid survival, growth and reproduction; sea urchin fertilization; and red algae growth and reproduction.

Q: Will the criteria used be indigenous to the site?

A: The organisms used are standard bioassay test species and may not be indigenous to a particular burn site. These organisms are being used because the effects of many toxic substances on these organisms has been well documented and their use in these tests will yield results that can be interpreted and compared to known toxicological responses. Tests with indigenous species can be conducted after the standard organism tests have been evaluated.

Q: Why not use a full range of marine organisms for testing?

A: The tests will use standard lab organisms that are routinely used for bioassay procedures, i.e. fish, mysids, sea urchins and algae, with a wide range of end-points, i.e. growth, reproduction, survival and pathology. The use of additional species or end points is not believed to be needed at this time since the toxicological effects on these organisms are well documented.

Q: How often will the waste feed cutoff system be tested?

A: The waste feed cutoff system and all continuous gas analyses valves and equipment will be tested prior to introduction wastes to the incinerator.

Q: Why is the Agency limiting its research to one waste stream-PCBs--when some others may be more toxic?

A: The purpose of the proposed research burns is to chemically characterize the emissions and to obtain data describing the toxicity of emissions which can be scientifically interpreted using known toxicological properties in the original waste. The Agency has chosen PCBs as the waste for these particular research burns because there would be only one type of substance in the waste and therefore the potential substances exiting the incineration process would be limited to unburned PCBs and related products of incomplete combustion. Use of a complex waste could make it more difficult to monitor emissions. The use of a complex mixture is therefore not appropriate for this test but will be more appropriate after the results of this test have been interpreted. There is also an extensive toxicology data base for PCBs which does not exist for complex waste mixtures, and will be useful in interpreting the toxicology results.

Q: Why not use the full range of waste streams which will be candidates for incineration-at-sea?

A: Additional wastes can be tested after the results of the tests for one waste (PCBs) are complete. EPA does not at this time wish to propose research burns for other wastes which might be candidates since each test requires considerable time and resources. The proposed research burns will provide sampling and analytical methodologies which will be used in later burns with other types of waste.

Q: EPA has taken the position that there will be no ambient air monitoring in relation to incineration-at-sea. If the program should involve 33 vessels, as is speculated, would there be ambient air modeling?

A: EPA has developed a research strategy for incineration-at-sea operations that includes high volume air sampling during monitoring cruises at incineration sites. This information will be used in developing an ambient air model that can be used for a one vessel program or a 33 vessel program.

Q: What quality assurance requirements will be used for monitoring ocean incineration emissions?

A: Before and during the research cruises, Quality Assurance audits will be conducted on all equipment which will be used for the research activities and on equipment used in the routine operation of the incinerators and the vessel.

Q: Why hasn't EPA included plans for long-range monitoring?

A: EPA does have a long-term monitoring program for incineration-at-sea operations. Several cruises have already been conducted at the Gulf of Mexico site and proposed North Atlantic site for the purpose of collecting baseline data. Area 3 of our Research Strategy will build upon this baseline information by incorporating long-term studies such as toxicity testing and sampling under different operating conditions, environmental monitoring for chronic effects and bioaccumulation, and detailed studies of transport and fate of emissions in the air and water column.

Q: Explain the methods for sampling from stacks.

A: There are many methods for sampling stack emissions, each with its own special purpose. The sampling method for organic substances consists of drawing a volume of emissions through a filter for particulate collection and then through a resin trap which absorbs organic materials. The organics on the resin and filter are extracted using a solvent and the solvent is chemically analyzed. EPA methods for sampling emissions for velocity, particulates, volatile organics, metals, flow characteristics etc. can be furnished upon request.

Q: Will the sampling be taken from several different areas of the stack?

A: During the proposed research burns, stack emission samples will be collected from 40 points in a cross section of the stack, and from a single point in the stack where the combustion efficiency is found to be the lowest. The analytical results from each sample will be compared to determine the need for traversal or if a single point sample is representative of the entire stack.

Q: Why is the Agency moving ahead with permits when there appear to be so any unanswered questions.

A: The Agency is moving ahead with research permits only. Permits for operational burns will not be issued until the regulation becomes final. The research permits will be issued in order to implement our Research Strategy which is designed to provide EPA with further information on incinerator emissions and their effects.

In issuing their report, the Science Advisory Board (SAB) stressed that their comments should be interpreted by the Agency and the public as a desire to strengthen already existing incineration programs rather than to discontinue what is already in place. The Committee stated "that hazardous waste incineration is a very important part of the Agency's strategy to properly manage and dispose of hazardous chemicals." The SAB concluded that further research is needed but "that the operation of both land and sea based hazardous waste incinerators has produced no adverse consequences to the public health or the environment."

Q: Why did the Agency propose ocean incineration permitting regulations before the research documents prepared by the Office of Policy, Planning and Evaluation and the Science Advisory Board were available?

A: The development of the proposed Ocean Incineration Regulation proceeded simultaneously with the preparation of the research documents by the Office of Policy, Planning and Evaluation (OPPE) and the Science Advisory Board (SAB). These efforts were closely coordinated. Thus, the proposed rule reflected the findings of the OPPE and SAB reports although actual publication of the rule occurred first. Moreover, comments relevant to issues discussed in all of these documents will be considered in the issuance of final regulations.

Q: What pressure is being put on the Agency to expedite the permitting process when research has not been completed, and at least in the short term land incineration capacity appears sufficient?

A: Under the Marine Protection, Research and Sanctuaries Act (MPRSA), Congress required EPA to establish and apply criteria for reviewing and evaluating permit applications and to issue permits if the applications met the criteria. Several companies submitted ocean incineration permit applications to the Agency, but the Agency, prior to proposing the rules in February, had not yet developed rules specific to ocean incineration activities. We believe that there is a sufficient body of knowledge based on previous ocean incineration research burns and the land-based regulatory requirements to propose a rule that provides a technically sound framework for the evaluation of ocean incineration permit applications. EPA also wanted the public to comment on its proposed approach for regulating ocean incineration activities.

Q: How does the Agency plan to implement this strategy [Research Strategy]?

A: As explained on p. 17 of our testimony, the Research Strategy will be implemented in three phases. With the assistance of Battelle, our contractor, we are in the midst of developing and verifying analytical sampling and testing methods. We have received two applications for permits to conduct research burns, the second phase of the strategy. We are evaluating the applications and expect to make our initial determination shortly. The work will be conducted jointly by EPA, Battelle and permittees. The third phase involves long-term studies and will be conducted as needed and when results from the first two phases are analyzed.

Q: What are Agency's plans for conducting research burns at this time?

A: We are evaluating two applications for permits to conduct research burns and expect to make our initial determinations shortly. According to our current schedule, the permits could become effective in January, 1986 at which time research burns could be conducted.

Q: Does the Agency intend to permit research burns before final permitting regulations are promulgated?

A: Yes. The Agency has prepared an incineration-at-sea research strategy that outlines how we intend to further evaluate the environmental impacts of ocean incineration. This research will verify the methods to be used in monitoring the incinerator emissions and will further refine the Agency's environmental monitoring program. Prior to completing the revisions of the proposed rule, EPA will conduct the initial stages of our ocean incineration research program and incorporate the results into the final rule.

Q: When and where will research burns take place?

A: In response to efforts to implement our research strategy, the Agency has received two applications for permits to conduct research burns. We are in the process of evaluating the applications and expect to make our initial determination shortly. We expect that the burns will be conducted in early 1986. At this time a decision has not been made on where to conduct the burns, although the Agency is considering sites off the Atlantic coast.

Q: Which companies have applied for research burn permits?

A: At-Sea Incineration, Inc. of Port Newark, New Jersey and Chemical Waste Management of Oak Brook, Illinois.

Q: Some assert that emissions will be trapped within the microlayer. Could you comment?

A: EPA has included studies of the microlayer in its research strategy. A microlayer workshop is being planned for early in the 1986 fiscal year where we intend to obtain information which will allow us to develop a scientifically valid study of the function of the microlayer in the transport of emission products and the effects of emission products on the microlayer itself. A baseline cruise is planned for September where we will try to collect microlayer samples from an area over 100 miles out to sea. These samples will then be analyzed to determine the types of substances that are present. Samples of air and water will also be collected and analyzed to determine if substances are concentrated in the microlayer.

Q: What criteria will be used to determine that a satisfactory [stack sampling] methodology has been achieved? How will the methodology be tested?

A: EPA has included tests in the research burn where the combustion efficiency and flow will be measured at 40 locations in a cross section of the incineration stack. Each of the 40 points will then be sampled for organic substances while a simultaneous single point sample will be collected at the point found to have the lowest combustion efficiency. Six sets of these simultaneous samples will be collected during each research burn and the analytical results statistically evaluated. If there is no statistical difference between destruction efficiency based upon the single point and traverse results, the use of a single point for sampling would be an acceptable methodolgy.

Q: On what basis was the Gulf site originally designated?

A: Before the Ocean Dumping Act became effective in 1973, over 5 million tons of industrial wastes were dumped into the U.S. marine waters. After 1973, conventional barging and dumping of these wastes into the ocean without prior treatment was generally prohibited. Demand for an effective waste disposal method increased in the Gulf States where over 34 percent of the nation's liquid hazardous waste is generated.

Producers of highly toxic liquid organic wastes from the large petrochemical industry in the western Gulf States sought other methods of destroying the wastes. EPA conducted a number of test burns to study the efficacy of the ocean incineration as a destruction technology. Data from the burns conducted in the area of the current Gulf Incineration Site supported the determination that ocean incineration is an environmentally sound alternative for destroying liquid hazardous wastes, particularly those wastes generated in the area of the Gulf. Accordingly, EPA proposed the designation of an ocean incineration site in this area of the Gulf of Mexico.

Q: Was there no comparison of Gulf locations before the site was designated?

A: EPA carefully studied the Gulf of Mexico for an environmentally acceptable location in which to perform ocean incineration activities. In 1974, the location for a test burn was selected based upon the following factors:

(1) Located outside all present disposal sites in order that detailed biological and chemical monitoring could be performed;
(2) situated far enough offshore so as to minimize the possibility of incineration products from reaching land;
(3) located within an area acceptable to the Coast Guard and Corps of Engineers;
(4) removed from areas of commercial or recreational activity or biological significance; and
(5) located in a area with favorable oceanographic and meteorological conditions that facilitate dispersal of the incineration by-products.

When the need for a formally designated ocean incineration site in the Gulf Region developed in 1976, the site of the test burns was re-evaluated using the general and specific site selection criteria of the existing Ocean Dumping Regulations in 40 CFR §§228.5 and 228.6.

With the assistance of Texas A & M, EPA prepared an environmental impact statement (EIS) for the Gulf site. In the EIS, EPA assessed the site of the previous test burns in terms of oceanographic, atmospheric and environmental factors relevant to its suitability as an ocean incineration site. Upon completion of the EIS, EPA determined that the site would meet or exceed each of the criteria for acceptability, with one minor geographical adjustment for navigational purposes. The USCG recommended that the Agency reorient the site's boundary coordinates to coincide with the Loran-C time delay grid, thus giving greater assurance that any vessel would remain within the boundaries of the site. This would facilitate USCG surveillance of the incineration activities.

Q: **Why is the Agency proposing to extend the Gulf site designation without evaluating alternative Gulf locations?**

A: EPA did not propose to extend the gulf site designation but rather proposed to limit the designation of the Gulf Incineration Site from its current continuing use to ten years in accordance with the new requirements of the proposed rule. On April 26, 1982, the Gulf Incineration Site was designated for continuing use pursuant to proper rule-making procedures and the existing requirements at 40 CFR Part 228.

The revisions to the current criteria for site designation proposed on February 28, 1985, would add two new information requirements relating to ocean incineration site management, including: determination of the carrying capacity of the site for the constituents in the incinerator emissions; and an environmental monitoring program for the site. In addition, EPA will carefully consider all comments suggesting other criteria for evaluation.

EPA intends to re-evaluate the Gulf Incineration Site based upon any new criteria that may be included in the final rule and/or based upon any new information the Agency receives pertaining to the appropriateness of using the site for ocean incineration activities once final regulations are issued.

Q: Given the amount of new information that has accrued since the Gulf Site was designated, and strong public appeal for a complete new review, why has EPA elected not to revoke the designation and repropose it subject to all new site criteria both technical and procedural?

A: EPA will re-evaluate the Gulf Incineration Site based upon any new criteria that may be included in the final rule and/or based upon any new information the Agency receives pertaining to the appropriateness of the present site.

Because no permit for commercial incineration activities will be authorized until final regulations are issued, and because these regulations may establish new factors for EPA's consideration in establishing ocean incineration sites, we believe that the lengthy process of re-evaluation should await the issuance of our final regulation. However, we would like to start collecting and reviewing any new information that is available on the Gulf Site and have requested that such information be forwarded to us.

Q: Would EPA permit burning at the site before the additional requirements proposed for new site designations were instituted?

A: EPA has indicated that it will not issue any operating permits before the promulgation of the final Ocean Incineration Regulation. In addition, the Agency does not anticipate use of the Gulf of Mexico Incineration Site for research.

Q: Please define "worst meteorological conditions".

A: Worst meteorological conditions are those where any potentially harmful emissions entrained in the plume would travel directly to shore without dispersion or diffusion. Given the turbulent nature of the atmosphere and the long distance to shore, this would be an highly unlikely event. If this scenario did occur, the high destruction efficiencies in the proposed regulation would still minimize the risk to individuals.

Q: Given the potential for hurricanes in the Gulf, why don't the proposed regulations at minimum prohibit incineration when conditions indicate the possibilily of a major storm?

A: During the public comment period on the proposed regulation, EPA received several comments on this issue. We are in the process of evaluating these comments. As part of the evaluation, we are working with the U.S. Coast Guard and National Oceanic and Atmospheric Administration in determining whether such factors should be included in the final rule.

Q: What efforts are to be taken to prevent pleasure craft and other vessels from entering the burn site?

A: Pleasure craft and other vessels are unlikely to enter the incineration site because incineration sites are located far from shore, off the continental shelf and away from shipping lanes. To warn other vessels of incineration activities, the U.S. Coast Guard would broadcast a "Notice to Mariners" on the vessel's route and departure and arrival schedules. In addition, the permittee would be required in accordance with the London Dumping Conventions Technical Guideline 3.3.2 to broadcast regular radio warnings during the period of incineration. (See Technical Guidelines on the Control of Incineration of Wastes and Other Matter At Sea Under the London Dumping Convention.)

A: Has EPA or the Coast Guard observed the number and kind of vessels entering the site during previous burns?

A: Neither the U.S. Coast Guard nor EPA personnel have observed any vessels in the incineration site while on-board the Vulcanus I during previous burns. EPA asked Chemical Waste Management, Inc. whether the Captain had observed any vessels other than a research vessel in the burn site during the burns at the Gulf Incineration site. Chemical Waste Management indicated that none had been sighted.

Q.: On what basis are risks to vessel crews "judged to be minor"?

A: Loading of hazardous wastes onto the vessels for example could present potentially significant risks to the vessel's crew. However, the U.S. Coast Guard through its design and operation requirements, minimize these risks. Some of the requirements which minimize the risks include:

- Closed gaging systems. These systems allow the crew to monitor the filling of the cargo tanks without opening the tanks and potentially exposing the crew to toxic vapors.
- Beam/3 vent riser systems. Such a system allows the venting of the vapors well above the deck. If the beam of the vessel is 60 feet, the venting of the vapors would have to be at least 20 feet above the deck.
- High level alarms. High level alarms must be on all cargo tanks so that a loud audio signal is given when the tank is filled to a certain level. This helps prevent overfilling of tanks and possible spillages.

Q.: How will incinerator ship personnel be protected from occupational exposure to the wastes and from emissions from the stack?

A: U.S. Coast Guard operational and safety requirements for incinerator vessels were designed to protect ship personnel from exposure to the wastes and emission from the stacks. In addition to the requirements mentioned in response to the previous question other examples of protective requirements include:

- showers and eye wash fountains in all cargo areas;
- medical first aid on-board the vessel;
- controlled venting systems for all cargo tanks;
- ventilation requirements for confined spaces, particularly for the pumproom;
- toxic vapor detectors;
- full protective suits with special breathing apparatus on-board for use in emergency situations; and
- a comprehensive respirator protection program.

Q: Has EPA analyzed the ash content and considered how it should be disposed of?

A: EPA would require the permittee to analyze the ash remaining in the tanks or combustion chamber after incineration and if found to be contaminated with hazardous constituents the ash must be incinerated at sea or off-loaded at approved port facilities for disposal in EPA-approved land-based facilities or treated in accordance with applicable EPA regulations.

Q: Why isn't this issue (ash content and disposal) addressed in proposed regulations?

A: The disposal of remaining ash or residues is addressed in §234.56(j) of the proposed Ocean Incineration Regulation.

Q: On what basis was it determined that a ten year period was appropriate and by whom?

A: EPA proposed a ten year time frame for the ocean incineration program with an automatic review of the permit after five years or more frequently as the Agency deems necessary.

EPA selected the ten year permit term to enable prospective applicants to make long-term commitments with waste generators to incinerate liquid hazardous wastes and because RCRA incineration permits are also issued for ten years. EPA believes that a ten year permit with a five year review will provide sufficient Agency control while also providing for the necessary "business certainty" to use this destruction technology.

After the Agency's internal review of the draft rule was completed, the Assistant Administrator for Water, Jack E. Ravan, forwarded the rule, as proposed, to Lee M. Thomas. On February 19, 1985, the Administrator concurred with the rule and signed it.

Q: Section 102 of NEPA requires that all agencies of the Federal Government prepare environmental impact statements for ".. major Federal actions significantly affecting the quality of the human environment..." (Section 102(c)). How does EPA interpret this provision and on what basis is the ocean incineration rule excluded from this requirement?

A: In 1974 EPA published a voluntary environmental impact statement (EIS) policy (39 FR 16186, May 7, 1974) that identified a number of programs for which an EIS would be prepared, including the criteria that EPA would use in regulating incineration-at-sea. This policy made clear that EPA has no legal obligation under the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*) to prepare an EIS for the listed activities, including the criteria that the Agency would establish for evaluating incineration-at-sea permit applications under Section 102(C) of MPRSA. [See Environmental Defense Fund, Inc. V. EPA, 489 F.2d 1247, 1256-57 (D.C. Cir. 1973); Essex Chemical Corp. V. Ruckelshaus, 486 F.2d 427, 431 (D.C. Cir. 1973); Portland Cement Ass'n V. Ruckelshaus, 486 F.2d 375, 384-85 (D.C. Cir. 1973); Anaconda Co. V. Ruckelshaus, 482 F.2d 1301, 1305-06 (10th Cir. 1973); Buckeye Power, Inc. V. EPA, 481 F.2d 162, 174 (6th Cir. 1973); Duquesne Light Co. V. EPA, 481 F.2d 1,9 (3rd Cir. 1973); International Harvester Co. V. Ruckelshaus, 478 F.2d 615, 650 n. 130 (D.C., 1983); Appalachian Power Co. v. EPA, 477 F.2d 495, 508 (4th Cir. 1973); Getty Oil V. Ruckelshaus, 467 F.2d 349, 359 (3rd Cir. 1972); cert. denied, 409 U.S. 1127 (1973).] However, EPA had nonetheless chosen to do so in the interest of providing a thorough environmental assessment of its proposals which could be more easily evaluated by the public.

Consistent with that policy, the U.S. Department of State and EPA jointly prepared an EIS on the amendments to Annexes I and II of the London Dumping Convention which established international regulations for the incineration of wastes at sea. *A Draft EIS for the Incineration of Wastes at Sea under the 1972 London Dumping Convention* was made available, October 4, 1978, and a *Final EIS*, February 4, 1979.

Over the years since the issuance of the EIS the Agency has considered and made available to the public a substantial amount of data and information on the environmental effects of incineration-at-sea. A list of these publications was included in Appendix B to the SUPPLEMENTARY INFORMATION section of the proposed rule.

[illegible] ormation EPA fully discussed in the SUPPLEMENTARY INFORMATION section of the proposed rule the various alternatives considered in the development of the proposed rule. In addition, to further supplement the information already available EPA will make available to the public any information that the Agency uses in conducting an analysis of the need for ocean incineration including, but not limited to, alternatives to ocean incineration. As always, EPA has provided and will continue to provide extensive public involvement in this rulemaking process.

In light of all of this, EPA does not believe that preparing a new EIS on the proposed Regulation would add in any significant way to the Agency's decisionmaking process or the public's understanding of the issues and environmental affects of incineration-at-sea and the public's opportunity to comment on the Agency's activities. It therefore rescinded the applicability of the Agency's voluntary EIS policy with respect to the rule.

Q: Please provide the Committee with other recent instances where EPA has rescinded its voluntary EIS policy.

A: EPA has only rescinded its voluntary EIS policy for the proposed Ocean Incineration Regulation because the data and information available to the public on the other programs covered by the policy have not been as extensive.

Q: Why don't the proposed regulations incorporate Coast Guard requirements for vessel construction and operation as a condition of the permit?

A: The proposed regulation requires the permittee to have and to display the U.S. Coast Guard Certificate of Inspection. The Certificate of Inspection indicates that the vessel complies with all U.S. Coast Guard regulations including those for operation, navigational safety, pollution prevention and those for the vessel's hull, equipment, machinery and incinerators.

EPA did not propose to incorporate all U.S. Coast Guard requirements as conditions in a permit since the U.S. Coast Guard is best able to monitor and enforce its own requirements that permittees must meet. However, the proposed rule includes a provision that the U.S. Coast Guard may recommend specific provisions that it deems necessary and appropriate for the monitoring and surveillance of the vessel's operation to be included in the permit.

O: Heretofore, EPA has required separate permits for both the trial phase and operating phase. Why has EPA now determined that this separate treatment and the need for two permits is no longer appropriate or necessary?

A: As proposed, there would be two phases to an operating permit. The first phase is a trial burn. During the trial burn the incinerator system is surveyed and its performance tested for combustion and destruction efficiencies on wastes similar to those that are to be incinerated during the operational phase of the permit.

This two-phased operating permit is similar to the process used to permit land-based incineration activities under the RCRA program. EPA proposed to adopt this same procedure with one change. Following completion of the trial burn, EPA proposed to give formal notice of the availability of the trial burn data and provide the public a 45 day period in which to submit their comments on this information, prior to the Agency authorizing commercial operations to begin. If as a result of the trial burn or public comment on the trial burn data, the Agency decided that any changes are required in the operating conditions from the range of conditions identified in the original permit, EPA would propose for public comment modifications in the permit prior to allowing commercial operations.

Under the existing Ocean Dumping Regulations, EPA has required separate permits for both the trial burn phase and the operating phase of ocean incineration activities. Research permits have been used to regulate trial burn activities, while special permits were intended to cover only the operating phase. EPA has now determined that this separate treatment and the need for two permits is no longer appropriate nor necessary. At the time the existing Ocean Dumping Regulations were issued in 1977, ocean incineration was relatively new to the U.S. Thus, it was thought that tests on the performance of the incineration technology, which had not been previously demonstrated in U.S. waters, was appropriately treated as a research activity. The type of technology intended to be employed by companies which have expressed interest in ocean incineration is now more established and thus, trial burn tests conducted to evaluate the performance of this technology is no longer, in the Agency's view, the type of activity for which the Act contemplated research permits to be issued. EPA believes trial burns are better handled as a component of commercial operating activities.

Q: Is this (single permit covering trial and operating phase) designed to benefit the companies involved?

A: A single permit covering the trial burn and operating phase is the process used in the land-based incineration program under RCRA and the one proposed for the ocean incineration program. Two separate permitting processes, one for a trial burn and one for an operating permit, would be a substantial burden on the Agency. By consolidating these permits and providing an opportunity for public review of the trial burn data, EPA would be significantly reducing the costs of processing the permits without decreasing the public's input into the permit process.

Q: Under the Resource Conservation and Recovery Act, candidate waste stored longer than ten days at dockside would require a permit. Under what regulatory scheme would wastes stored less than ten days fall?

A: Transporters may store manifested shipments of hazardous waste in containers at a transfer facility for up to ten days without being subject to the permitting requirements of RCRA. The containers must meet packaging requirements of 49 CFR Parts 173, 178, and 179. A transfer facility is defined as "any transportation related facility including loading docks, parking areas, storage areas and other similar areas where shipments of hazardous waste are held during the normal course of transportation." Any facility that does not meet the definition of a transfer facility cannot store for any time period without a permit. Therefore, transfer facilities may accumulate containers for transportation to the incinerator ship for no longer than 10 days. If the containers are stored for longer than 10 days, all RCRA permitting requirements for storage facilities apply.

Q: EPA's proposed rules seek to eliminate the adjudicatory hearing and the hearing officer's report. Isn't this interfering in the public participation process?

A: The proposed rule affords substantial opportunity for the public to become involved in the permit issuance process. The proposed rule provides public notice and opportunity to comment on any tentative determination to issue or to deny a permit application request. Any person may request a public hearing on such a tentative determination and where held, the Assistant Administrator appoints a Hearing Officer who is responsible for the conduct of the hearing. A transcript of the hearing becomes part of the administrative record upon which the permit decision is made. Following the public comment period and any public hearing held, the Assistant Administrator issues a permit decision, which must be sent to all commenters or individuals requesting a copy. Any person who filed comments on the permit or who participated in a public hearing on the permit may petition the Administrator to review the Assistant Administrator's permit decision. Persons who failed to comment on the permit or to participate in a hearing on the permit may request a review by the Administrator if the permit issued by the Assistant Administrator differs from the draft permit. In addition, the public is provided 45 days to comment on the trial burn data prior to allowing a permittee to initiate the activities authorized by an operating permit.

While EPA believes that the adjudicatory hearing and hearing officer's report do not measurably increase the public's input into the decision-making process the Agency requested public comment on its proposal and will carefully evaluate all the comments received prior to developing a final rule.

Q: Shouldn't EPA incorporate provisions in the permit application which would allow EPA to determine the integrity of the applicant?

A: The Agency considered but rejected a proposal to include in its criteria for evaluating a permit application an applicant's past history in complying with other Federal, State or local environmental laws as a means of determining the "integrity" of the applicant. While in theory it may sound reasonable to look at an applicants' history of compliance under other laws, the Agency found that equitable criteria were impossible to develop. Instead, the Agency indicated in the SUPPLEMENTARY INFORMATION section of the proposed rule that it will develop an enforcement strategy to guide the Agency in responding to permit violations and determining whether a permit should be renewed.

The Agency received a substantial number of public comments on this question. A number of commenters recommended that the Agency should require the applicants to at least identify the enforcement actions taken against them under other Federal and/or State hazardous waste disposal statutes. The Agency will carefully review all recommendations before deciding on an approach for the final rule.

Q: Is an applicant's compliance record considered in other permitting programs?

A: EPA generally does not consider an applicant's record of complying with other Federal, State or local environmental laws in issuing a permit under any of its permit programs. However, an applicant's record of compliance with the terms and conditions of its permit is evaluated in enforcement actions and in permit revocation, modification or renewal decisions. This is similar to other federal programs. For example, the Federal Communications Commission and the Office of Surface Mining (Department of Interior) review past and current compliance with the applicable law in evaluating permit and licensing applications. 47 CFR § 22.13; 3 CFR § 773.15(b)(3)

Q: Why do the proposed regulations only refer to the role of other agencies instead of spelling out their responsibilities in relation to incineration-at-sea?

A: With the assistance of other Federal agencies, EPA identified what these other Federal agencies believe to be their roles and responsibilities in incineration-at-sea activities. This multi-agency activity is confusing to the public. We need to better communicate the roles and responsibilities of each of the agencies involved in ocean incineration-related activities and we will seek to do so in the final rule.

Q: Please provide the Committee with a list of Memorandum of Understanding (MOUs) or any interagency agreements relating to ocean incineration.

A: To the best of our knowledge, two interagency agreements relating to ocean incineration have been formulated:

1. A 1974 agreement between EPA and the National Oceanic and Atmospheric Administration (NOAA) to use the NOAA vessell Oregon II for two surveys in the Gulf of Mexico for three weeks at $34,000; and

2. An October 8, 1980 memorandum from EPA Administrator Douglas M. Costle and Department of Commerce Assistant Secretary for Maritime Affairs Samuel B. Nemirow establishing an interagency Review Board to coordinate a chemical waste incinerator ship program.

Q: When will EPA designate the Atlantic and Pacific incineration sites?

A: The North Atlantic Incineration Site is in the final stages of Agency review. We are in the early stages of a multi-year effort to locate an area off the Pacific coast for designation as an incineration site.

Q: How will recent findings of the National Marine Fisheries Service, showing that the Atlantic Site is a whale habitat, affect the designation of the Atlantic site?

A: We expect that the findings of the National Marine Fisheries Service (NMFS) will not alter the conclusions stated in the Environmental Impact Statement for North Atlantic Incineration Site Designation, i.e., the likelihood of impacts an endangered species is remote. Our recent modelling efforts indicate that there is no danger to whales from bioaccumulation. The model uses very conservative assumptions, i.e. 1,500 metric tons of PCB's are burned every seven days, emission levels above those authorized in the proposed regulation are not diluted in the atmosphere and enter the water at a single location, all emissions (particulate and gases) are bioavailable, and high bioconcentration rates. In order to verify our conclusions we intend to monitor whales and their food sources during EPA survey cruises and research burns.

At the recommendation of NMFS, we recently reevaulated potential effects of ocean incineration activities on endangered marine species. We have presented our analysis of the information to NMFS. NMFS has concurred with our determination that research activities will not affect any endangered species under the jurisdiction of NMFS. However, NMFS has stated that designation of sites for long-term at-sea incineration activities will require initiation of formal consultation. We intend to initiate this process with NMFS in the near future.

Q: Should a new assessment of the Atlantic site be made?

A: EPA has already re-evaluated available information on the Atlantic site and has determined that the original conclusion of the Environmental Impact Statement for North Atlantic Incineration Site Designation, that probable environmental consequences of incineration of the proposed site would be minimal, is still valid.

Q: What will the effect be on the EPA budget of a three vessel program or a thirty-three ship program?

A: It is difficult to evaluate the budgetary effects of a three ship or thirty-three ship program since. Several factors would affect costs, including location of burns, frequency of burns, permit processing costs, compliance monitoring, site survey costs, and special monitoring costs. Under a thirty-three ship program, we would expect some cost savings due to economies of scale, but it is not possible at this time to quantitatively evaluate the costs.

Q: What are the total costs of processing and issuing an incinerator ship permit and keeping a shiprider on board each vessel?

A: These costs are not available at this time since the Agency has not processed or issued an operational incinerator ship permit nor utilized shipriders on commercial incinerator vessels.

Q: What is the probability of a catastrophic spill at dockside and what would the effects be of such a spill?

A: The Office of Policy, Planning, and Evaluation studied the relative risks of ocean-based and land-based incineration, including the risks of spills during transportation. The estimated rate for spills of any size in the pier and harbor area is about one every 3000 operating years. The estimated rate for spills of three or more tanks at the pier and harbor area is about one every 63,000 operating years. These calculations assume that there are 14 voyages per operating year. (See Exhibit 5-4 in Background Report IV to the OPPE study).

The effects of spills in the pier and harbor area were not assessed. Spills could be contained with booms and removed through suction dredging, thereby substantially reducing releases of material to the environment and subsequent impacts.

Q: What is the probability of a partial ship rupture at sea? What is the probability of a full ship rupture at sea? What would the effects be on human life, marine life and the reproductive capacity of the marine environment?

A: The estimated rate for spills of one or two tanks along the coast (outside of the bay) and in the burn zone is about one every 2,400 operating years. The probability of a spill of three tanks or more along the coast or in the burn zone is approximately one spill every 46,000 operating years. It is assumed there are 14 voyages in an operating year.

An analysis of the effects of spills was conducted for spills occurring at two locations -- the first is near the mouth of the Mississippi (29 degrees 45 minutes north and 88 degrees 30 minutes west) and the second in the Gulf Coast Burn Zone (26 degrees 40 minutes North and 93 degrees 40 minutes west). Two types of wastes were examined. The first was assumed to contain (by weight) 35% polychlorinated biphenyls (PCBs) and 65% non-hazardous materials, whereas the second was assumed to contain (by weight) 50% ethylene dichloride (EDC) and 50% non-hazardous materials. The analysis assumed that no cleanup and mitigation of spills occurred.

The estimated effects of spills in the various locations and for each waste are outlined below. (A more detailed discussion of potential effects is provided in Chapter 7 of Background Report IV to the OPPE study.) It should be understood that there is substantial uncertainty involved in modelling the effects of spills on the marine ecosystems. Thus, the analytical results should be viewed as providing only a general indication, rather than a precise estimate of the potential effects.

Spill of PCBs Wastes on the Shelf

PCB wastes initially may float or sink depending on the density of the entire waste mixture relative to seawater. However, as lighter hydrocarbons volatilize, the PCB wastes will eventually sink and settle on the ocean floor. Floating spills will temporarily interfere with the surficial microlayer. The longer term effects on the marine ecosystem would probably be similar to those modelled for the sinking case. The model indicates that sediments in an area of about 17,500 square kilometers would eventually become contaminated above 1 ppb. A spill of half a tank probably would result in a small decrease in the total biomass levels in the area with benthic organisms suffering a substantial reduction. Most trophic levels, however, would experience an increase of PCBs levels in their tissue of two to three orders of magnitude. Large pelagic and demersal fish would experience the largest increase, followed by small pelagic fish and demersal detritivores (e.g., shrimp and crabs). These levels of PCB contamination might cause chronic effects in the marine species. Spills of greater amounts are estimated to result in proportionately higher concentrations in tissues, i.e., about 4 times greater for a 2 tank spill and 16 times greater for an 8 tank spill. The effects of larger spills on the biomass of benthic organisms are also predicted to be more severe. There is substantial uncertainty concerning the length of time and concentration at which PCBs would remain in the sediments.

Spill of PCBs Wastes in the Burn Zone

PCB wastes may initially float or sink depending on the density of the waste mixture relative to seawater. A temporary effect of a floating spill would be to interfere with the surficial microlayer. The longer term effects probably would be similiar to those modelled for the sinking case, since the PCBs wastes would eventually sink and settle on the ocean floor. The model indicates that sediments in an areas of about 57,000 square kilometers would eventually be contaminated above 1 ppb. A spill of a half a tank probably would result in a small decrease in the biomass of the benthic communities. The effects on benthic communities are estimated to be more severe for larger spills. PCB concentrations are projected to increase slightly in only benthic species and bottom feeders. Larger spills are projected to increase PCB tissue concentrations in benthic species and bottom feeders by three to four orders of magnitude, but there is little effect on pelagic fish. As with the spill on the shelf, there is considerable uncertainty over the duration of PCBs in sediments and it is likely that the effects modelled for benthic communites would persist for fairly long periods of time.

Spill of EDC

Spills of EDC likely would go into solution and rapidly disperse. The relatively brief elevated water concentrations would cause a short increase in marine tissue concentrations of EDC. The concentration of EDC in the tissue would quickly return to background levels. The marine effects would likely be transient and minor.

Human Health Effects

Volitilization of PCBs or EDCs spilled on the shelf or in the burn zone would not result in concentrations that would be of concern to human health.

Q: What is the status of cleanup methods for chemicals spills at dockside, in coastal areas and at sea?

A: EPA is conducting a broad-based study of containment and cleanup methods for hazardous materials spills. As part of this effort, the U.S. Coast Guard is evaluating chemical response techniques at sea including techniques for containing chemicals that float, sink, dissolve and vaporize in sea water. For each of these four categories the U.S. Coast Guard will publish a manual of practice.

For chemicals that float, booms are the usual containment method. While the use of dispersants is a response option for oil spills, they are not normally considered during response to chemical spills. This is especially valid in protected waters, such as harbors, where the opportunity to recover spilled chemicals that float are best. To use dispersants in these areas, except to reduce hazard to human life from highly volatile chemicals, would complicate recovery efforts. Depending on the depth of the water, dredging may be used to recover chemicals that sink. The U.S. Coast Guard will initiate feasibility studies in FY 1987 to study appropriate response techniques for chemicals that dissolve in sea water or vaporize.

Q: Is cleanup possible at all?

A: Cleanup of chemical spills is possible but such cleanup is dependent on the location in which the chemical spill occurs, the specific chemicals spilled and the weather conditions at the time of the spill. For chemicals that vaporize, "cleanup" techniques are in their infancy. The normal response technique is to remove personnel from the area and to ensure that the chemical vaporizes away from personnel through such devices as fans. The use of fans or blowers to disperse vapors may be used when chemicals are spilled in confined areas such as compartments aboard ships. It should be noted, however, that the use of this technique in situations where chemicals that vaporize are spilled in the open is unlikely. Fans of sufficient size to have any effect on even a calm day would not normally be available in time to be of use.

Q: For the most part, experience with chemical cleanup is based on single chemicals. Incinerator ships would carry mixed wastes. Have you examined the effect of mixed wastes?

A: While the U.S. Coast Guard's experience in containing chemicals is primarily with single chemical spills, the U.S. Coast Guard does have experience in responding to a variety of different types of chemical spills including chemicals that float, sink, dissolve or vaporize. In developing an appropriate response to a spill, the U.S. Coast Guard will need and EPA will provide the U.S. Coast Guard with the permittee's waste analysis. Information included in this waste analysis, such as the specific gravity of the wastes, will allow the U.S. Coast Guard to quickly respond to a spill if one were to occur.

Q: In your view, is there a fundamental distinction between vessels that transport hazardous cargo and incinerator ships? If so, does this distinction justify the application of different liability and insurance requirements?

A: Fundamentally, there is no distinction between vessels that transport hazardous cargo and incinerator ships. Commercial hazardous products which are routinely transported by ship are carried in type II of III ships, depending upon the degree of hazard involved. Ships carrying these cargoes are required to have restricted or closed gauges and controlled venting with elevated vent risers to minimize vapror exposure to crew members. These are the highest standards considered appropriate for cargoes possessing hazards of this nature. Incinerator ships incorporate all of these design features including ship type. Ship type requirements are applied on the basis of the hazard a substance will pose if released to the environment. A ship type I is a the highest standard. To date, the ship type I is only applied to a few chemicals such as phosphorus and chlorosulfonic acid whic pose extreme flammability and reactivity hazards upon release. Incinerator ships are required to meet requirements for a ship type II and typically carry mixtures containing hundreds of components, some of which are highly hazardous from a health standpoint but present in only low concentrations. The overall health hazards of the mixtures are generally comparable to those of commercial hazardous products.

In discussing the issue of financial responsibility in the proposed ocean incineration regulations, EPA considered the fact that ships which transport hazardous cargoes are similar in nature to ocean incineration ships. As explained above, structurally, incinerator vessels must be the same as most chemical carriers, i.e., they must satisfy Coast Guard requirements for a Type II bulk chemical carrier. This means that they must have double hulls and double bottoms and store their cargoes in several independent compartments in order to minimize the likelihood that a collision could cause a rupture of the storage compartments. Some differences may exist which could affect liability and insurance requirements. For example, although both carry hazardous cargoes, chemical carriers generally do not carry substances as hazardous as PCB wastes. Incineration vessels carry much smaller loads than chemical carriers (chemical carriers generally range from 20,000 to 70,000 dead weight tons whereas incinerator vessels range from 3500 to 6000 dead weight tons.) EPA requested comments and historical data on the number, severity, and cost of accidents for operations transporting hazardous substances, such as chemical tankers, in order to aid the agency in assessing the potential for spills from ocean incineration activities and the appropriate level of insurance to be imposed.

Q: In developing the proposed insurance and liability requirements, did the agency examine requirements applied to vessels transporting hazardous cargo? What insurance and liability requirements are cargo vessels subject to? What is the history of third party damage recovery in incindences involving hazardous cargo leaks, spills, and explosions?

A: In developing the proposed regulations EPA did examine liability schemes developed in other areas and current insurance coverage for vessels similar to ocean incineration ships. For example, in the area of oil spill pollution, international agreements have been established to provide for levels of liability and compensation for clean up actions in the event of a spill. (These pollution liability regimes are contained in the International Convention on Civil Liabilty ofr Oil Pollution Damage, 1969 (Civil Liability Convention of CLC) and the International Convention on the Establishment of an International Fund for the Compensation for Oil Pollution Damage, 1971). Also limits of liability established under CERCLA vary depending upon the categorization of the operation. Vessels which routinely transport hazardous substances as cargo or residue are limited to a maximum liability of $300 per gross ton or 5 million, whichever is greater, while liability for a facility is full clean-up costs plus $50 million in natural resources damage. These types of provisions impose liability limits as opposed to insurance requirements (which is the focus of the ocean incineration regulations), but were used as a reference point for considering an appropriate level of financial capability which should be demonstated by an incinerator vessel.

With respect to insurance coverage, the Agency noted its understanding that operators of vessels moving hazardous cargoes (such as oil and chemicals) use protection and idemnity and excess policies for insurance coverage related to pollution incidents, such as the costs of containment and cleanup. These policies provide insurance coverage for various obligations set forth in State, Federal, and international statutes, conventions, and voluntary schemes such as §311(p) of the Clean Water Act, the Trans Alaska Pipeline Act, the Tanker Owner's Voluntary Agreement Concerning Liability for Oil Pollution (TOVALOP), and the CLC. The level of insurance that companies maintain did not seem to be related specifically to anyone of these requirements, but rather to be set by the carrier's judgment of a prudent policy. Coverage for some typical companies range from $375 million to $500 million.

EPA does not have information as to the full history of third party damage recovery in incidences involving hazardous cargo leaks, spills and explosions.

Q: A witness testifying on behalf of the Texas Attorney General's Office suggests that EPA could require waiver of the Limitation of Ship Owner's Liability Act as a permit condidtion. Has the Agency examined the feasibility of doing so?

A: As EPA noted in its preamble to the proposed ocean incineration regulations, the MPRSA and its legislative history do not appear to authorize the Administrator to repeal limits on liability established under other statutes which might affect third party recovery rights and thus, would not authorize the Administrator to require a permittee to waive such limitations as a condition of his permit. The question of whether any third party recovery is available must be decided based upon other Federal or State statutes or common law principles.

Q: Mr. Ravan stated at the July 17, 1985 hearing when asked about liability issues, "we are clearly in the midst of bringing up to you for consideration possible amendments either to CERCLA or to perhaps MPRSA." Are statutory changes needed in the Marine Protection, Research, and Sanctuaries Act or the Comprehensive Environmental Response, Compensation, and Liability Act to expand the Agency's authority to establish more comprehensive liability you insurance requirements than those proposed? Do you believe that the absence of clear third party damage recovery needs to be addressed in legislation?

A: The MPRSA is silent on financial responsibility requirements. In its proposed regulations, EPA explained its position that the broad purposes of the MPRSA and rulemaking authority provided to the Administrator under the statute, as well as traditional acceptance of the imposition of appropriate insurance requirements upon permittees for activities presenting risk to the public health and welfare, provided strong support for the imposition of "reasonable" insurance requirements. Many commenters have taken the position that financial responsibility requirements are not authorized by the MPRSA or that any requirements imposed are limited to the limits of liability imposed under CERCLA. CERCLA limits the liability of vessels to $300 per gross ton or $5 million, whichever is greater, while facilities are liable for full clean-up costs plus $50 million in natural resource damages. If incineration ships are considered to be vessels, as opposed to facilities, recovery in the event of a CERCLA clean-up action would be limited. Amendments to the MPRSA and CERCLA which explicitly confirmed EPA's position would remove any question concerning EPA's authority to impose appropriate insurance requirements on incineration ships and would make clear that for purposes of a CERCLA clean-up these ships would be treated in the same manner as land-based incineration activities.

The MPRSA does not provide for third party causes of action. In addition, the Supreme Court and several lower court decisions have concluded that the MPRSA preempts federal common law or maritime tort law in the field of marine pollution regulated under the MPRSA. Moreover, even where a cause of action may continue to exist, the Limit on Shipowners Liability Act (LOSLA) would likely limit the amount of any recovery. An amendment to the MPRSA has been proposed which would reverse the Court decisions concerning common law recoveries. However, unless specifically exempted from application, LOSLA would still likely limit the amount of any recovery.

Q.: The proposed regulations are silent on the minimum acceptable terms that an insurance policy must contain other than suggested dollar levels. Has the Agency considered additional minimal requirements? For example, requiring absolute liability coverage or coverage for third party economic injury?

A.: The proposed regulations do provide that an insurance policy include several specific provisions. These include a provision that the bankruptcy or insolvency of the insured shall not relieve the insurer of its obligation, that the insurer be liable for payment of amounts within a deductible applicable to the policy, and that the policy be capable of being cancelled only after 60 days written notification to EPA. EPA has not proposed requiring absolute liability coverage or coverage for third party damage. EPA will carefully consider all comments on the issue of insurance, including those concerning the need for additional minimum requirements.

O.: Have EPA and the Coast Guard made efforts to coordinate regulatory efforts?

A: Each Agency has worked to ensure that the appropriate personnel from the other Agency were involved in its regulatory development process. For example U.S. Coast Guard personnel worked closely with EPA personnel in developing the proposed Ocean Incineration Regulation, and in explaining the proposed rule at public meetings and at hearings. The U.S. Coast Guard will continue to work closely with EPA as we evaluate the public's comments on the proposed rule and prepare a final rule.

Q:	Please discuss the history of contacts between the Maritime Administration and EPA on the subject of ocean incineration permitting. When were contacts initiated, what parties were involved, in what context did they occur?
A:	The contacts between EPA and the Maritime Administration have been until recently, among mid-level staff and have been in the context of developing an ocean incineration program. We cannot document for the Committee discussions which may have occured on any ocean incineration permitting issue. Except for informational purposes, the Maritime Administration is not currently involved in EPA's ocean incineration permitting process.

In February 1980, an Interagency Ad Hoc Work Group for the Chemical Waste Incineration Ship Program was established to conduct a study of at-sea incineration technology and to examine various alternatives available to the Federal Government leading to the design, construction, and operation of one or more U.S. flag incinerator ships. The Report of this Interagency Ad Hoc Work Group was published in September, 1980. The Interagency Ad Hoc Work Group included representatives of the Maritime Administration, EPA, U.S. Coast Guard and the National Bureau of Standards.

The co-chairmen of the Interagency Ad Hoc Work Group were Russell H. Wyer of EPA and Daniel W. Leubecker of the Maritime Administration. The Report was accepted by Douglas M. Costle, Administrator, EPA and Samuel B. Nemirow, Assistant Secretary for Maritime Affairs, U.S. Department of Commerce.

An Interagency Review Board evolved from the Interagency Ad Hoc Work Group and continued to meet after completion of the Report. However in February, 1984, EPA recommended elevating Board issues and policy decisions to a higher management level in EPA, the Maritime Administration, and the U.S. Coast Guard. Today, the Board members consist of the Assistant Administrator for Water, EPA, the Deputy Administrator of MARAD, and the Chief, Office of Merchant Marine Safety, U.S. Coast Guard. Since February, 1984, the Board has met several times to discuss the ocean incineration related activities of each of the Agencies in order to develop a unified Federal approach to the program.

In June 1984, Mr. Leubecker of the Maritime Administration attended the regulatory development meetings that EPA held for Federal, State and local representatives, environmental and public interest groups and industry representatives. The Maritime Administration also provided EPA with comments on early drafts of the proposed rule. In addition, personnel from the Maritime Administration attended several of EPA's public hearings on the proposed rule.

Q: To the extent possible, please document all contacts between EPA and the Office of Management and Budget on ocean incineration including the nature of the contact, participants, and subjects discussed. Please provide copies of all correspondence between the two agencies on this subject.

A: The contacts between EPA's Office of Water and OMB on ocean incineration have been relatively minimal. There were several discussions between the OMB desk officer and EPA staff during OMB's review of the rule under EO 1229. We received written comments for inclusion into the proposed ocean incineration regulation which was published for public comment on February 28, 1985. These comments resulted from OMB's review, under the Paperwork Reduction Act, of information collection contained in the proposed rule. A copy of the comments are attached. We expect to respond to the comments of OMB and the public when we promulgate the final rule.

EPA's Office of Legislative Analysis did, by telephone, obtain OMB clearance of the testimony for the July 17, 1985 oversight hearing on ocean incineration.

NOTICE OF OFFICE OF MANAGEMENT AND BUDGET ACTION

(657)

RECEIVED
APR 18 1985

F/10.2, 9.0, 24.1,
24.2, 24.3

TO:	NANETTE LIEPMAN ENVIRONMENTAL PROTECTION AGENCY 401 M ST., S.W., RM. 3317, PM-223 WASHINGTON, D.C. 20460 Water	ACTION DATE 04/10/85

ON 02/23/85, YOU REQUESTED APPROVAL OF THE FOLLOWING INFORMATION COLLECTION:
TITLE: OCEAN INCINERATION APPLICATION, REPORTING AND RECORDKEEPING
AGENCY FORM NOS.: 1194

IN ACCORDANCE WITH THE PAPERWORK REDUCTION ACT, WE HAVE TAKEN THE FOLLOWING ACTION ON THIS INFORMATION COLLECTION:

NOT APPROVED. SEE "REMARKS" BELOW.

EFFECT ON BURDEN:	RESPONSES	REPORTING HOURS
PREVIOUS STATUS	0	0
NEW STATUS	0	0
DIFFERENCE	0	0

REMARKS:

The following are questions EPA should address during its consideration of comments received on the proposed rule. What information will a permit applicant be required to submit to justify an alternative insurance limit. Could the applicant combine self and external insurance to satisfy the requirement, if so, what information would EPA require? 2.

If several incinerator ships or companies operate out of the same ports can they share much of the information in a contingency plan? Can a port have a preprepared plan (containing emergency numbers, etc.) that is then modified to match any permittee specific requirements?

What specifically will EPA do with the waste analyses and 2

[illegible]

OMB NO. XXXX-XXXX

REMARKS CONTINUED:
monitoring data it receives. How will the trial burn plan be evaluated? 24.2

This information collection request is disapproved pending EPAs response to these questions during the final rulemaking. 24.3

ABSTRACT:
COMMERCIAL WASTE DISPOSERS APPLYING FOR AN OCEAN INCINERATION PERMIT WILL SUBMIT SUPPORTING INFORMATION ON WHICH EPA WILL BASE THE DECISION TO ISSUE OR DENY THE PERMIT. SUPPORTING INFORMATION IS FURNISHED AT TIME OF APPLICATION. MONITORING DATA AND WASTE ANALYSES ARE RECORDED AND SUBMITTED AT TIME OF VESSEL RETURN AND DEPARTURE.

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ALLOWANCE LETTER: NO     FUNCTION: MULTIPLE FUNCTIONS
OM PLAN: NO              EXCEED BUDGET: NO                      3504(H): N/A
NO. OF FORMS: 1          USE: PUBLIC                            REQUEST: NEW
RESPONDENTS: 1           RESPONSES: 0                           HOURS: 0
AFFECTED PUBLIC: BUS/INST
SMALL BUSINESS: NO    ACTIVITY TYPE: 999
PURPOSE: REG/COMP
FREQUENCY: OCCAS & ANNL
COLLECTION METHOD: MAIL S/A
RETENTION:          COLLECTION AGENT: RCDKPNG RQT        CONFIDENTIALITY: NO
COMPULSORY STATUS: MANDATORY
FEDERAL COST:                           PUBLIC COST:
REVIEWER: RICHARD D. OTIS
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------------------------------------------------------------------------------
ACTION          !AUTHORIZING OFFICIAL  !TITLE: DEPUTY ADMINISTRATOR!DATE
APPROVED BY:    !/S/JAMES B. MACRAE FOR !OFFICE OF INFORMATION      !04/10/85
                !                       !AND REGULATORY AFFAIRS     !
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Q: Of the burns that took place in 1977 did any take place in the Gulf of Mexico? If so, when did the burns take place; what was burned and what quantities; and where was the vessels loaded?

A: Between March and April 1977, approximately 16,400 metric tons of waste were incinerated in the Gulf of Mexico. This waste was loaded onto the Vulcanus I at Deer Park, Texas, and consisted of manufacturing byproducts from the manufacture of allyl chloride epichlorohydrine, dichloroethane and vinyl chloride.

Q: Has EPA consulted with Mexico to address possible impacts on that country resulting from the Gulf burn site designation?

A: The Ocean Incineration Regulation proposed general and specific criteria that the Agency would use in designating ocean incineration sites. EPA has made every effort to consult with the Mexican Government during the development of the Ocean Incineration Regulation and during the public comment period.

Both EPA Headquarters and Region VI in Dallas have provided the Mexican Government with a complete copy of the proposed regulation and extensive background documents as a result of the Agency's scientific studies. When the Regulation was proposed in the Federal Register, the Mexican Government, through our Embassy in Mexico City, was formally invited to submit their official comments which would be considered by the Agency as part of the public rulemaking process.

EPA Region VI officials in Dallas have had several bilateral discussions with Mexican authorities about the proposed Ocean Incineration Regulation and they have explained many of the technical aspects of the regulation to the Mexican Government. Also, the matter has been discussed during the meeting of the work group on hazardous materials under the U.S. - Mexico Border Environmental Agreement.

In addition, EPA issued a formal invitation to the Mexican Government to attend and give comments at the public hearing in Brownsville on April 25, 1985. The Agency scheduled the Mexican speaker high on the agenda, following the comments of Governor White of Texas. While the Mexican Government sent a representative to the hearing, that representative did not testify.

The Mexican Government has recently submitted comments on the proposed rule. Their primary concern, as with many U.S. commenters, was the risk of spills due accidents or catastrophic events. The Mexican Government also observed that the environmental monitoring provisions of the proposed regulation were based on changes that may occur as a result of the incineration activities. However, they asserted that the present environmental conditions are not well understood. They also want assurances that in case of a spill, the ocean currents would not carry wastes into Mexican territorial waters and that there would be no adverse effects on migratory species of economic and ecological importance to Mexico.

EPA will seriously consider the comments of the Mexican Government as we evaluate potential changes in the proposed rule.

Q: What are the legal ramifications of a leak or spill at the Gulf burn site which might have an adverse effect on Mexico?

A: Because this question involves complex issues of international law which is the purview of the Department of State, we believe that this question should be referred to that Agency.

Q.: When will that [generic needs] analysis be published?

A: The Agency requested public comment on the nature of the needs analysis that we should conduct. EPA is presently evaluating the substantial number of public comments that addressed this issue and is considering a number of different approaches. In the near future we will prepare a schedule for the needs analysis and we will be happy to provide that schedule to the Committee when it is completed.

Q.: Will the analysis address needs on a national or regional basis?

A: The Agency has not yet decided on an approach for conducting the needs analysis. Some commenters made a very strong case for a "national" needs analysis; other commenters were equally persuasive in their recommendations for a "regional" analysis; while others proposed doing a permit by permit analysis. In deciding on an appropriate approach, the Agency will be weighing the availability and suitability of data to a national, and/or a regional, or permit by permit analysis.

Q.: Should we allow ocean incineration if there is no need for it in any particular region of the country?

A: One of the recommendations that the Agency received was to evaluate the need for a particular permit based on whether ocean incineration is needed in the region where the permittee would be collecting the wastes for incineration. The Agency is seriously considering this recommendation.

Q.: Your proposed regulations provide that EPA will presume there is a need to incinerate if the risks of ocean incineration are no greater than the risks for land-based alternatives. Why did you propose to adopt this presumption in your regulations?

A: EPA believes that the most significant factor in determining the "need" for ocean incineration is an assessment of the relative human health and environmental impacts of ocean incineration and practicable land-based alternatives to it. A land-based alternative should be used when it presents less environmental and human health risk than ocean incineration and is feasibile and available at a reasonable incremental cost, taking into account the relative environmental and health risks associated with the alternative and ocean incineration. However, where practicable land-based alternatives are not present or would result in greater risks, ocean incineration is appropriate. Moreover, where on balance the risks of the land-based alternatives are similar to ocean incineration, EPA believes there is no legal requirement nor practical reason to prohibit the use of ocean incineration.

Q.: How will EPA consider regional needs under this need test?

A: EPA is currently considering whether its determination as to need should be based on a regional basis.

Q.: Proponents of ocean incineration have indicated that they intend to burn low-energy liquid wastes, waste which they claim cannot be burned in land incinerators with solids and sludges. High-energy waste would be used in rotary kilns to help burn solids and sludges. In New Jersey, the hazardous waste facility siting commission believes that all of the liquid waste is needed for use in land incinerators. How will EPA address this technological need for use of waste under its needs test?

A: EPA is currently evaluating what factors are appropriate or how particular components of a needs analysis should be considered.

O.: Your proposed regulations would require ocean incinerators to carry insurance sufficient to cover the cost of cleanup and damages caused by incineration activities. But the Ocean Dumping Act does not explicitly give EPA this authority. Should this Committee amend that Act to explicitly give EPA this authority?

A: Yes. The Agency believes it has authority under existing statutes; however, given the controversial and sometimes murky nature of the issues and authorities, any clarification and sharpening of authorities and requirements would be helpful.

O: Respond to the following SAB concern:

"The Committee believes the Agency should take steps to further minimize the occurence of leaks and spills and initiate the preparation of emergency response plans to anticipate such events."

A: The contingency plan is an EPA permit requirement. This plan describes the safety features which exist on the vessel to minimize chances of leaks or spills, and a detailed plan of action should one occur. The Coast Guard has agreed to review the plans to ensure the adequacy of the vessel owner's intended response organization and actions in the event of a spill. The requirements for contingency plan content specified in EPA's proposed regulations, 40 CFR, part 234.19, address these response issues.

O: There appears to be no document which explicitly defines the roles of EPA and DOT with regard to any overlapping responsibilities for RCRA and the Hazardous Transport Act.

A: EPA has adopted by reference certain DOT regulations governing the transportation of hazardous materials, including regulations on labeling, marking, placarding, using proper containers, and reporting discharges. In addition, EPA and DOT jointly promulgated the uniform manifest regulations. EPA's adoption and joint promulgation of these DOT regulations ensures consistency with DOT regulations. The EPA and DOT regulations apply to both interstate and intrastate transportation of hazardous waste. Each agency is responsible for enforcing its respective regulations. A memorandum of understanding (MOU) was completed in 1980 between EPA and DOT regarding enforcement of transportation regulations. Through that MOU, EPA is responsible for monitoring compliance of generators and treatment, storage and disposal facilities with RCRA requirements. DOT is responsible for monitoring transporters/shippers of hazardous waste for compliance with those provisions of the Hazardous Materials Transportation Act having to do with RCRA. Except for transporters of bulk shipments of hazardous waste by water, a transporter who meets all applicable requirements of 49 CFR Parts 171 through 179 (DOT regulations) and the requirements of 40 CFR 263.11 (EPA identification number) and 263.31 (discharge clean up) will be deemed in compliance with EPA transporter regulations (40 CFR Part 263) to mitigate duplicative requirements.

Q: The Federal government has not specified procedures to handle toxic chemical wastes nor has it evaluated alternative procedures to determine which are most effective in minimizing spills and fugitive emissions.

Since the major route for critical movement of hazardous wastes during an accident is likely to be through the atmosphere, a red-time emergency response simulation capability should be developed to provide a site specific analysis of the atmospheric transport and dispersion of toxic gases and particles released or evaporated into the air.

A: Under current EPA regulations, an air, rail, highway, or water transporter who has discharged hazardous waste must give the following notices:

1. Contact the National Response Center as soon as the transporter realizes the discharge exceeds the reportable quantity, if required by 49 CFR 171.15;

2. Report in writing to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, Department of Transportation, as required by 49 CFR 171.16; and,

3. Provide the same notice required by 33 CFR 153.203 for oil and hazardous substances (for water transporters).

In addition to these required notices, a transporter is responsible for cleaning up any discharge and must take any action required or approved by Federal, State, or local officials.

Also, each permit application for a landfill or surface impoundment must be accompanied by exposure information which must include information concerning transport on site and in the immediate vicinity. This exposure information also must include pathway - specific information for ground water, surface water, air, subsurface gas, and soil. EPA also is required to promulgate "such regulations for the monitoring and control of air emissions at hazardous waste treatment, storage, and disposal facilities" not later than 30 months after November 8, 1984.

Finally, each treatment, storage, and disposal facility must meet the requirements for preparedness and prevention. These requirements include provisions on safety equipment, access to communications or alarm systems, and arrangements with local authorities. Each facility also must comply with specified emergency procedures and must prepare a contingency plan. The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. Copies of the contingency plan, together with any revisions, must be maintained at the facility and submitted to all local police and fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

It should be noted that the quoted statement concerns accidents at a land-based incineration/storage facility. For incineration at sea, the response to fires, spills, etc. are detailed in the contingency plan for each permit application and are port specific. The plan describes who is responsible for each response activity.

Q.: Waste Management wants to use the Vulcanus II for incineration operations in U.S. waters. Is there a single regulation, as presently drafted by the EPA, that the Vulcanus II will not be able to meet?

A: EPA has not evaluated whether the Vulcanus II would or would not meet the requirements of the proposed Ocean Incineration Regulation. If the Vulcanus II could not meet the requirements of the rule, the vessel would not be permitted to incinerate in U.S. waters.

Q.: Are there any (requirements) the Vulcanus I would not be able to meet?

A: EPA has not evaluated whether Vulcanus I would or would not meet the requirements of the proposed Ocean Incineration Regulation. If the Vulcanus I could not meet the requirements of the rule, the vessel would not be permitted to incinerate in the U.S. waters.

Q.: In light of the many questions about ocean incineration that remain to be resolved, the research on the process the EPA is just starting, and the development of new incineration technologies that is underway, why has the EPA proposed a 10-year permit period for incineration vesesls?

A: EPA selected a ten year time frame for the ocean incineration operating permits with a safeguard built into the program for an automatic review of the permit after five years or more frequently as the Assistant Administrator deems necessary plus recertification of every two years. Ten years was selected because 10-years is the time frame for land-based incineration permits and a period of time which the Agency believes would allow prospective applicants to make long-term commitments with waste generators to incinerate liquid hazardous wastes.

O.: Wouldn't a three or five year permit period make more sense at a time when we are just beginning to understand the complexities of ocean incineration?

A: In evaluating the time frame for operating permits, EPA also considered maintaining the three year term of the Ocean Dumping Regulations or proposing a five year term. EPA selected a ten year time frame for the ocean incineration program with the flexibility to modify the terms of the permit after five years if, EPA finds, for example:

- Inadequate performance based on a review of the monitoring data or destruction efficiency tests; or
- There is no longer a need for the ocean incineration of a particular hazardous waste based on the ocean incineration of a particular hazardous waste based on the availability of practicable land-based destruction alternatives for that particular hazardous waste; or
- Unacceptable human health or environmental impacts exists based on new evidence of the effect of ocean incineration activities.

O: Quoting from the EPA's Incineration Study, "the results of these trial burns are subject to large uncertainty and con - siderable debate because of the procedures used and the limited number of PIC compounds that were considered. Thus, our estimates could be in error by many orders of magnitude." This sounds like you really aren't sure what is coming out of the stack. Why do you have the confidence to move forward with commercial application of this technology in light of this finding?

A: We have the confidence to move forward with a commerical at-sea incineration program based on the information and data accumulated to date and in light of the fact that past burns have produced no adverse consequences to the public health or the environment.

Previous test burns of incineration at sea emissions have involved various sampling and analytical methods that were specifically designed for certain waste materials or compounds. Not all of these methods and results are applicable to the risk assessment conducted for the Incineration Study. For example, some of the estimates of emission rates used in the Incineration Study were based upon detection limits of specific substances in emission samples and not on observed emission concentrations. The actual amount of these specific substances could have in fact been orders of magnitude less than the detection limit and thus in too low a concentration to be quantified. Other substances could have been present but not observed.

EPA has developed a research strategy to further characterize emissions from the incineration process. The proposed research burns will have lower detection limits and will look for different substances.

Q: The report goes on to say that ocean-based incinerators generate a higher level of PICs when incinerating general organic wastes than land-based incinerators do. Has an explanation been found for this difference?

A: As stated in the incinerator study report, the differences in the calculated PIC emission from land and at sea incineration could be due to: different sampling procedures; possible contamination; different compounds being analyzed for and thus the use of different methods for calculating PIC concentration; different wastes; or different incineration conditions. EPA intends to study PIC formation during its proposed research burns. Emissions will be analyzed using several methods to attempt to determine how much and what PICs are present.

Q: What steps has the EPA taken to address this difference or others that may be unique to the ocean-incineration process?

A: EPA's proposed research burns will include studies of PIC concentrations in emissions from incineration at sea operations.

Q: What plan of action have the two agencies (NOAA/EPA) developed in working out a monitoring program for ocean incineration?

A: The two Agencies have not developed a formal plan of action. However EPA used knowledge and expertise gained from other NOAA/EPA efforts to develop an ocean incineration monitoring program. EPA plans to utilize environmental data gathered by various NOAA programs (especially the MARMAP Program) in its monitoring program.

Q: Will the 106-mile site monitoring plan be used as a model?

A: Yes. The 106-mile plan sets forth a plan to collect information that is needed to evaluate the response and effects of toxic compounds on the marine environment. The main elements of the plan are similar to those needed to assess exposure and effects of incinerator emissions, especially since the sites are adjacent.

Q: What is the status of the 106-mile site monitoring plan?

A: The plan is under development at this time. We plan to hold a workshop later this year involving personnel from NOAA and EPA's Office of Water, Office of Research and Development, and Regions II and III. The purpose of the meeting will be to collect information needed to complete the plan.

Q: Are the existing program that are expected to be part of this monitoring plan still being funded? (Please address the MARMAP program in particular.)

A: EPA defers to NOAA on the question of MARMAP funding. The MARMAP program no longer exists as such. The functions are funded for FY 85 under a program called "Resource Information".

Q: Do you forsee adequate funding in the future for programs which can give us an accurate assessment of the long-term efforts of ocean incineration?

A: If the President's FY 1986 budget request is approved, we should have adequate funding for assessment activities. In FY 1985, the Agency's budget for ocean incineration activities was $480,000. The FY 1986 budget request is $3,500,000 for the following categories:

site designation and monitoring	$1,500,000
monitoring research burns	$1,000,000
predictive modelling	$ 500,000
permit evaluation	$ 300,000
compliance monitoring	$ 200,000
	$3,500,000

A statutory provision giving the Administrator the authority to adopt a user fee system in which the fees would be deposited in EPA's principal appropriation account would help insure adequate funding.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 5 [illegible]

OFFICE OF
THE ADMINISTRATOR

Honorable Lloyd Bentsen
Committee on Environment and
Public Works
U. S. Senate
2nd and Constitution Avenue, N. E.
Washington, D. C. 20510

Dear Senator Bentsen:

Attached are my responses to the questions you asked me to address following my testimony on July 17, 1985 regarding the incineration of hazardous wastes.

Once again, I wish to thank you and the other Committee members for the opportunity to present the views of the Science Advisory Board on this important public policy issue. Please call on me again if I can be of further assistance to you or the Committee.

Sincerely,

Terry F. Yosie, Director
Science Advisory Board

Responses from Terry F. Yosie, Director, Science Advisory Board to questions from Senator Bentsen

Question - Did the Science Advisory Board anticipate that regulations would be proposed before completion of its report when the report was initiated?

Response - Yes. The SAB was fully informed of the Agency's timetable for developing and proposing regulations. The Board sought to complete its report prior to the start of public hearings on the proposed regulations in order to enable EPA and the public to be informed of its findings and recommendations. In addition, the Board publicly released a draft of its report in December 1984. There are no substantive differences between the draft and final reports.

Question - Are Science Advisory Board reports subject to pre-publication review by the Office of Management and Budget?

Response - SAB reports, including the report on hazardous waste incineration, have never been subject to pre-publication review by OMB. Neither are they subject to pre-publication review by EPA.

Question - The letter of transmittal to the Administrator accompanying the report expressly asks for an Agency response. Has the Science Advisory Board received an Agency response? If not, has the Agency indicated when a response would be forthcoming? If yes, describe their response.

Response - The SAB has received a verbal response from EPA staff in addition to follow-up briefings on the implementation of a number of recommendations in the SAB report. A formal written response to the SAB report is expected following EPA's analysis of public comments on the proposed incineration regulations.

Question - The Science Advisory Board report concludes that several areas of research are needed to adequately characterize ocean incineration. In your view, are permitting regulations premature if this research is not completed? Explain.

Response - The SAB report recommends several kinds of research including controlled laboratory studies and field assessments. The Board believes that actual operation of incinerators provides an opportunity to assess their performance and gather additional data in order to resolve a number of the scientific issues reviewed in the SAB report. Thus, the issuance of permits may be a useful way to complete some elements of the needed research. For example, the SAB states on page V of its report that it "also encourages the Agency to use the permitting process in such a way as to increase the knowledge base on monitoring and possibly other issues." The SAB recognizes, however, that many issues besides science must be weighed before the issuance of permits.

Question - You indicated at the hearing that a majority of the Environmental Effects, Transport and Fate Committee members agreed with the final incineration report. How many members objected to the report and on what grounds?

Response - The recruitment of scientific experts to serve on SAB committees is designed to capture the diverse points of view that exist in the scientific community. The Environmental Effects, Transport and Fate Committee was represented by marine biologists, toxicologists, meteorologists, combustions engineers, and ecologists, among others. No member of the Committee formally objected (i.e. wrote dissenting minority opinions or voted against the report) to the report, although the personal views of several members differ in degree from the collective views expressed in the Committee report. This is to be expected given the diversity of views represented on the Committee.

Responses from Terry F. Yosie, Director, Science Advisory Board to questions from Senator Lautenberg

Question - The SAB Report raises a number of problems involved in storage, transfer and transportation of liquid hazardous waste. I would like Dr. Yosie to elaborate on and Mr. Longest and Commander Kine to respond to each of the following concerns from this report.

"The Committee believes the Agency should take steps to further minimize the occurrence of leaks and spills and initiate the preparation of emergency response plans to anticipate such events." (p. 8)

Response - The Committee evaluated the pathways of hazardous waste disposal from the point of waste generation to the incineration of wastes. The Committee believes that there is a possibility that fugitive emissions and accidential spills may release as much or more toxic material to the environment than direct emissions from incinerator stacks. Thus, it recommends that EPA assess releases from all phases of the waste management and disposal process and prepare appropriate contingency plans in the event of accidental releases from each phase.

Question - "There appears to be no document which explicitly defines the roles of EPA and DOT with regard to any overlapping responsibilities for RCRA and the Hazardous Transport Act." (p. 8)

Response - The Committee received briefings from EPA and DOT staff with regard to their joint planning in implementing RCRA and HMTA. The Committee examined the handling of wastes at Emile, Alabama in some detail and concluded that EPA and DOT had not explicitly defined their respective roles in all waste storage, transfer and transportation processes. This factor, combined with data on the nature and frequency of accidental spills, fugitive emissions and waste handling procedures, led the Committee to express its concern on EPA-DOT joint efforts.

Question - "The Federal Government has not specified procedures to handle toxic chemical wastes, nor has it evaluated alternative procedures to determine which are most effective in minimizing spills and fugitive emissions." (p. 12)

Response - There appears to be some variability in waste handling procedures between the Federal government and the private sector. Waste handling procedures will, in turn, influence the nature and frequency of fugitive emissions and accidental spills. The Committee recommends that EPA more thoroughly evaluate alternative procedures to reduce the possibility of chemical exposures.

Question - "Since the major route for the critical movement of hazardous wastes during an accident is likely to be through the atmosphere, a real-time emergency response simulation capability should be developed to provide a site-specific analysis of the atmospheric transport and dispersion of toxic gases and particles released or evaporated into the air."

Response - The Committee concludes that a knowledge of site-specific atmospheric transport conditions is an important element for responding rapidly to accidential releases of chemicals. Real time, site-specific atmospheric transport simulation models can be used to better understand the dispersion of pollutants and, furthermore, to better understand the frequency of exposures to humans and the environment.

Response from Terry F. Yosie, Director, Science Advisory Board to question from Senator Biden

Question - EPA and SAB -- Quoting from the EPA's Incineration study, "the results of these trial burns are subject to large uncertainty and considerable debate because of the procedures used and the limited number of PIC compounds that were considered. Thus, our estimates could be in error by many orders of magnitude." This sounds like you really aren't sure what is coming out of the stack. Why do you have the confidence to move forward with commercial application of this technology in light of this finding?

The report goes on to say that ocean-based incinerators generate a higher level of PICs when incinerating general organic wastes than land-based incinerators do. Has an explanation been found for this difference? What steps has the EPA taken to address this difference or others that may be unique to the ocean-incineration process?

Response - The SAB concluded that the toxicities of effluents and emissions from both land and sea based incinerators are largely unknown. It recommends that the toxicities of representative effluents and emissions should be tested, at a minimum, on sensitive life stages of representative aquatic and terrestrial organisms, excluding humans.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Oceanography & Marine Assessment
Ocean Assessments Division
Rockville, Maryland 20852

AUG 21 1985

Honorable Lloyd Bentsen
United States Senate
Washington, D.C. 20510

Dear Senator Bentsen:

Enclosed are answers to a series of questions posed on August 7, 1985, concerning ocean incineration.

Sincerely,

Daniel J Basta for
Charles N. Ehler
Chief

Enclosure

ANSWERS TO QUESTIONS FROM THE HONORABLE LLOYD BENTSEN TO CHARLES N. EHLER, CHIEF, OCEAN ASSESSMENTS DIVISION, NATIONAL OCEAN SERVICE, NOAA, ON TESTIMONY ON OCEAN INCINERATION

Q1. Does NOAA have any specific responsibilities for ocean research and monitoring and for marine life sanctuaries that would directly apply to ocean incineration under the Marine Protection, Research, and Sanctuaries Act?

A1. NOAA's responsibilities under the Marine Protection, Research, and Sanctuaries Act include monitoring and research regarding the effects of the dumping of materials into ocean waters, possible long-term effects of pollution, overfishing, and man-induced changes to ocean ecosystems, and that which may be associated with designation and operation of marine sanctuaries. No major efforts have been undertaken on ocean incineration to date because of work that has been underway since 1974 at the U.S. Environmental Protection Agency (EPA), although NOAA is providing scientific support to EPA concerning areas where burns are contemplated. For example, we are at present providing data to EPA on the location of breeding, spawning, nursery, feeding, etc., of living marine resources in the vicinity of potential burn sites, as well as the location of recreational and commercial fishing areas, other amenity areas, and ocean uses. The feasibility of surveillance and monitoring, and oceanographic factors such as dispersal, horizontal transport, vertical mixing characteristics, current direction and velocity, are also being provided to EPA.

Q2. Has NOAA participated in evaluating the burn sites EPA has under consideration?

a. Would NOAA actively assist in monitoring the sites if EPA proceeds with a permitting program?

b. Does NOAA have a position on the suitability of sites that EPA has proposed?

A2. NOAA has not participated in evaluating the burn sites EPA has under consideration, except as outlined above, and through assistance in developing monitoring strategies.

A2a. NOAA has no plans to actively assist in monitoring the sites if EPA proceeds with a permitting program. However, NOAA and EPA scientists are working jointly to devise a preliminary strategy in areas where burns might be conducted.

A2b. To our knowledge the selection of the proposed burn sites were made in full consideration of applicable scientific factors. The question of suitability must, however, also be addressed in the overall context of the relative risk to human populations of hazardous materials disposal. For example, it is entirely conceivable that ocean incineration could be deemed - after proper evaluation and comparison - a more acceptable risk than given land-based alternatives. This is why we believe incineration should remain a potential disposal option for certain classes of wastes and under prescribed conditions.

Q3. The EPA Science Advisory Board report cites several areas where additional research is needed to adequately characterize ocean incineration. Research on the effects of emissions upon the microlayer and assessment of incineration by-products are but two areas that are "largely unknown" according to the report.

-- Has NOAA reviewed the SAB report?

If so, is the Agency still satisfied that incineration should go forward before additional research is done?

A3. NOAA has not formally reviewed the SAB report but wishes to emphasize that it has not stated it is "satisfied incineration should go forward before additional research is done." We fully support EPA plans for conducting further "research burns" in given areas.

Q6. (Posed by Senator Biden) NOAA and EPA -- What plan of action have the two agencies developed in working out a monitoring program for ocean incineration? Will the 106-mile site monitoring plan be used as a model? What is the status of the 106-mile site monitoring plan?

Are the existing program that are expected to be part of this monitoring plan still being funded? (Please address the MARMAP program in particular). Do you forsee adequate funding in the future for programs which can give us an accurate assessment of the long-term effects of ocean incineration?

A6. NOAA and EPA scientists have met to develop plans for an ocean incineration monitoring strategy. This strategy will be refined further based on research burns.

NOAA and EPA have developed a monitoring strategy for the 106-Mile Site to be implemented in connection with possible sewage sludge dumping. Any lessons learned as a result of monitoring in the vicinity of the 106-Mile Site will be applied to ocean incineration. However, the problems are so dissimilar that the former should not be used as a model.

Resources available to NOAA in the future, including those associated with MARMAP, cannot now be reconciled in detail. Funds to complete development of strategies for monitoring the 106-Mile Site and ocean incineration areas should be available. MARMAP is a specific program administered by NOAA's National Marine Fisheries Service -- who can provide additional information if required.

U.S. Department
of Transportation
United States
Coast Guard

Commandant
United States Coast Guard

Washington, DC 20593
Staff Symbol: G-CC
Phone: (202) 426-4280

16460

SEP 16 1985

The Honorable Lloyd Bentsen
United States Senate
Washington, D.C. 20510

Dear Senator Bentsen:

As you requested in your letter of August 7, 1985, I am forwarding responses to the questions raised by the Subcommittee on Environmental Pollution and by Senator Joseph R. Biden, Jr., concerning Commodore Kime's testimony on ocean incineration.

Sincerely,

W. T. LELAND
CAPTAIN, U.S. COAST GUARD
CHIEF, [illegible] STAFF

Enclosure

Responses to Questions Submitted by Senator Bentsen

1. Q. When does the Coast Guard intend to propose ocean incineration vessel design and construction standards?

A. The draft of the Notice of Proposed Rulemaking is in internal Coast Guard clearance. The target date of publication of the NPRM is September/October 1985.

Q. Generally, what will the content be of these proposed regulations?

A. The regulations are intended to ensure the safe and environmentally protective handling, transport, and incineration of hazardous chemical waste which may be flammable and toxic. To achieve this, the proposed rule will (1) apply to incinerator ships the requirements in 46 CFR Part 153 which apply to chemical tankers carrying commercial cargoes, (2) apply requirements applicable to large fired units such as boilers and hot water heaters to the waste incinerators in order to ensure safe operation, and (3) apply additional equipment requirements to ensure the safe transfer of wastes from cargo tanks to the incinerators. Examples of these requirements include: vessel arrangements, vessel construction standards, cargo containment systems, cargo tank gauging, cargo pumps and pump rooms, cargo tank overflow and control systems, toxic vapor protection, incinerator flame sensing devices and flame failure cutoffs, incinerator ignition sequencing systems, emergency shutdown, firefighting systems, structural fire protection requirements, lifesaving equipment, cargo venting systems, ventilation systems, and various operational procedures and controls. Compliance with these requirements would be a prerequisite for an incinerator vessel to carry and burn bulk hazardous wastes at sea.

2. Q. Has the Occupational Safety and Health Administration transferred responsibility for ship and dock worker safety matters to the Coast Guard? If so, under what authority?

A. The Coast Guard has the authority under section 4(b)(1) of the Occupational Safety and Health Act of 1970 to promulgate safety and health regulations affecting the working conditions of seaman (maritime personnel) aboard inspected vessels. In addition the Coast Guard and OSHA signed a Memorandum of Understanding (MOU) in 1983 which states that the Coast Guard is the dominant federal agency with statutory authority (46 U.S.C. 3305 and 3306) to prescribe and enforce regulations concerning occupational safety and health issues on vessels inspected and certified by the Coast Guard. The Coast Guard has no responsibility for safety matters related to dock workers - these workers are under OSHA's jurisdiction.

3a. Q. Describe the current Coast Guard capacity to cleanup hazardous chemical waste in harbor areas, in coastal areas and at sea. How much experience does the Coast Guard have in cleaning up complex chemical waste?

A. Coast Guard policy, both past and present, is to encourage the spiller to undertake cleanup action. This policy applies to both oil or chemical products including wastes, since the same laws and response methods would be applicable. When the responsible party is unknown or does not take appropriate cleanup action the Coast Guard uses Federal funds to procure commercial contractors to conduct the cleanup. The Coast Guard has concentrated on developing a spill management capability for hazardous materials spills and has encouraged industry to develop and maintain cleanup equipment. Therefore, we have very little actual chemical cleanup hardware. This strategy is effective and over the past few years we have effectively dealt with a number of chemical incidents. Fortunately, the majority of these spills have been on land. The few chemical incidents that have occurred on the water have been in more shallow coastal waters where state-of-the-art technology allowed for some cleanup activity.

3b. Q. Precisely, what methods of clean up would the Coast Guard use or require liable parties to use in the event of a major release of hazardous waste at sea and how effective are they?

A. Any cleanup conducted on land will be less difficult and have a relatively higher degree of success than one conducted on materials that have spilled into water. Spills offshore will likewise be more difficult to contain and recover than similar operations conducted in protected waters. The success of mitigating a chemical release no matter where it may occur is dependent on the physical properties of the material. If the material is heavier than water and sinks, dredging may be used to recover the material. For materials that float standard oil recovery techniques, such as booms and skimmers, can be used. If the chemical vaporizes, it is unlikely that it will be contained and removed whether spilled on land or in the water. If the chemical is soluble and rapidly mixes, it is unlikely that it can be contained or recovered whether offshore or in protected waters. Coast Guard Research and Development is currently conducting research to determine methods for cleanup of chemicals that mix, float, and sink in water.

4. Q. Do Coast Guard Captains of The Port have the necessary expertise to deal with handling, storing, and transferring chemically complex wastes? Are there specific guidelines for the Captain of The Port to follow in managing these activities - especially ship loading and navigation.

A. Yes, the Coast Guard Captains of the Port (COTPs) have the expertise and experience to monitor the transfer and storage of hazardous materials including hazardous waste mixtures. Specific regulatory requirements for waterfront facilities are in 33 CFR 126 for the storage and transfer of hazardous materials. Chemical products covered by these regulations include acrylonitrile, benzene, butadiene, and chlorine, some of which are known carcinogens and acutely toxic. These regulations equally apply to the stowage and transfer of chemical wastes. When transferring chemicals or chemical wastes these regulations require that the material condition of the components of the transfer system are adequate, that all required tests of the piping systems have been properly inspected and tested, and that personnel supervising the transfer operation are designated as the "person in charge." Under 33 CFR 126 the COTP has the authority to place any other requirements on the facility that in his judgement are necessary for safety.

The Coast Guard also requires as a permit condition that the facility comply with the oil transfer requirements in 33 CFR 154 and 156. These regulations additionally require that the facility prepare an operations plan which will define all aspects of the waste transfer.

The navigation safety requirements are in 33 CFR 164. These regulations pertain to vessels over 1600 gross tons and require that each vessel have a radar system for surface navigation, charts of the area to be navigated, constant manning of the wheel house and tests of the steering, main propulsion and electrical generating gear prior to getting underway. Under the Ports and Waterways Safety Act and in 33 CFR 160 the COTP may for the safe transit of a vessel impose any one or combination of the following restrictions or requirements:

- Require advanced notice of arrival of a vessel prior to arrival at the facility.
- Require Coast Guard escort and/or commercial tugs to standby or assist the incinerator ship in transit of the harbor.
- Restrict transit to daylight hours.
- Restrict transit routes.
- Require a minimum visibility and maximum wind conditions during transit through the port area.
- Require moving safety zone around the incinerator ship during ship transit through the port area
- Establish a safety zone around the waterfront facility to transfer Hazardous waste to the ship.
- Broadcast a Notice to Mariners on incinerator ship route and departure and arrival schedule.
- Provide or arrange for surveillance to and from the incineration site by radar, Coast Guard cutter, aircraft or other means.
- Coordinate with local emergency and marine officials.
- Broadcast a Notice to Mariners of the location of the burn site and scheduled dates of incineration.
- Close the port to all vessel traffic during the transit of the incinerator ship through piloting waters.

5a. Q. Does the Coast Guard intend to monitor activities at the burn sites, for example whether each ship is actually located at the burn site, that weather conditions are adequate, that required navigation procedures are being followed?

A. Initially we intend to provide Coast Guard shipriders on board the incinerator ships for the complete voyage. These personnel will insure that the ship is operating within the EPA approved burn site, and in accordance with applicable Coast Guard regulations.

5b. Q. When will the automated surveillance system you noted at the hearing be available?

A. The developement and testing stage of the Ocean Dumping Surveillance System (ODSS) is scheduled for completion in the spring of 1986. This electronic device will be capable of providing real-time position and dumping information to a shore-based master station.

5c Q. You stated in your testimony that the Captain of The Port has the authority to require that Coast Guard vessels accompany incinerator vessels.

---Under what circumstances would this authority be used?

---Why not make this a permanent condition of incineration ship operation or require that Coast Guard personnel be on board for all incinerator vessel voyages to assure compliance with procedures

A. Under authority of the Port and Waterway Safety Act the COTP may require vessel escorts if in his judgment this action is necessary for the safe transit of a vessel.

Vessel escorts will not be required as a general policy since each port is different and the COTP is in the best position to determine the adequate measures for the safe transit of a vessel. Besides a vessel escort the COTP may establish a moving safety zone, set visibility restrictions, require daylight transit, require tug assistance, or require a combination of these measures.

The purpose of a Coast Guard shiprider is to ensure the incinerator ship takes the proper route to the incineration site and stays within the site during incineration. The safe navigation of the ship is the responsibility of the ship's licensed master and pilot.

6a. Q. Has The Coast Guard monitored the type and number of vessels that normally pass through the Gulf Coast burn site?

A. The Coast Guard has not monitored the number and types of vessels that would normally transit the designated burn site in the Gulf of Mexico. It should be noted that the site is located approximately 170 miles off the coast of Brownsville Texas and away from heavily trafficked commercial vessel shipping lanes.

6b. Q. Is there a plan for preventing entry of vessels other than the incineration ships from entering burn sites either completely or during the duration of the burns.

A. It is anticipated that the present regulations dictating navigational equipment, live watches and the announcement of scheduled operations in the Notice To Mariners will adequately prevent casualties at sea. The movement of other vessels will not be restricted in the designated burn sites during incinerator ship operations. A Notice to Mariners will announce the date, time and location of incineration activities and will advise vessels to stay clear of these operations.

Responses to Questions Submitted By Senator Lautenberg

1. Q. The Committee believes the agency should take steps to further minimize the occurrence of leaks and spills and initiate the preparation of emergency response plans to anticipate such events.

A. The Coast Guard has actively pursued pollution prevention requirements for vessels and facilities. For oil transfers these actions have resulted in reducing the spill rate from 51 spills per 1000 transfers in 1972 to 5.5 spills per 1000 transfers in 1983. The spill rate for hazardous materials for 1983 is even lower at 3.6 spills per 1000 transfers. The requirement for facilities to comply with the waterfront facility regulations in 33 CFR 126 and the oil transfer requirements in 33 CFR 154, 155, and 156, together with monitoring every hazardous waste transfer, should further improve this excellent transfer record. The Coast Guard has recognized the need to update regulations governing bulk hazardous material transfer facilities and we are initiating rulemaking. A separate rulemaking will cover pollution prevention requirements for bulk liquid hazardous materials and waste. We plan to publish a Notice of Proposed Rule Making in the Federal Register in March, 1986.

Concerning contingency planning, the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) was initiated by the Federal Water Pollution Control Act (FWPCA). The NCP which has since been amended by the Clean Water Act and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), has been tested numerous times during its 15 year existence. During this time, it was found to be a viable document, along with the regional and local contingency plans, for managing and coordinating pollution response actions. In addition, EPA has required contingency plans in the permit process for incineration ships that identify the corporate response organization. These measures more than adequately address pollution response.

2. Q. There appears to be no document which explicitly defines the roles of EPA and DOT with regard to any overlapping responsibilities for RCRA and the Hazardous Transport Act

A. The Hazardous Materials Transportation Act in 49 CFR and RCRA in 40 CFR delineate specific responsibilities to the DOT and EPA. 49 CFR 171-179 cover the transportation, classification, stowage, packaging, reporting and marking of hazardous materials. 40 CFR 260-265 covers the identification, transportation, monitoring, reporting, characterization, disposal and reporting of hazardous wastes.

3. Q. The Federal Government has not specified procedures to handle toxic chemical wastes, nor has it evaluated alternative procedures to determine which are most effective in minimizing spills and fugitive emissions.

A. Coast Guard regulations for ensuring the safe and environmentally protective transport of hazardous materials on ships are applicable to chemical wastes. These regulations include special handling procedures, equipment requirements to minimize the risk of small spills during transfer operations, and design and construction standards to minimize the risk of cargo release as a result of a collision or grounding.

While formulating Coast Guard policy with respect to ensuring the safe navigation and operation of the incineration vessel and safe stowage and transfer of hazardous wastes to the incineration vessel, the Coast Guard has evaluated and implemented procedures based on those that have been most effective in minimizing hazardous material spills in the past. In addition when incinerator vessels begin commencing operations the COTP will have under existing regulations in 33 CFR 126, 154-156 and 160-165 the authority to consider a host of operational procedures which he may impose on the stowage and transportation of hazardous wastes. The imposition of these procedures will be based on local conditions and on the effectiveness of each procedure to minimize spills and fugitive emissions.

4. Q. Since the major route for the critical movement of hazardous wastes during an accident is likely to be through the atmosphere, a real-time emergency response simulation capability should be developed to provide a site-specific analysis of the atmospheric transport and dispersion of toxic gases and particles released or evaporated into the air.

A. The Coast Guard has developed emergency response simulation models to handle the release of vapors during accidents involving hazardous materials. One simulation, the Hazard Assessment Computer System (HACS), can be used to assess the hazards of vapors that are considered to be the same density as air, or neutrally buoyant. The second simulation, the Dense Gas Dispersion model (DEGADIS), can be used to assess the hazards of vapors that are considered to be more dense than air, or negatively buoyant.

Both HACS and DEGADIS will calculate the extent of the hazard zone created by the release of a hazardous material as well as the amount of time that the hazardous situation will remain after the spill has occurred. Results from these models can be obtained as either tabular or graphical output or both.

Both of these models were developed to assess the hazards of pure chemical vapors. In the case of mixtures, such as hazardous wastes, the technique the Coast Guard has used in the past is to obtain an assessment for the most volatile and most hazardous components of the mixture. Although the results obtained in this manner will not provide an exact and detailed hazard assessment, they will provide a conservative estimate that is very useful in safely responding to these spills.

HACS and DEGADIS were developed to be site independent since the Coast Guard has the responsibility for responding to spills in all U.S. waters. The number of possible sites at which spill accidents can occur is virtually limitless, thereby making the development of site specific simulations highly impractical and very expensive.

HACS has been operational since 1976 and is available for use by government agencies through the National Response Center located at Coast Guard Headquarters. The DEGADIS model has just recently been completed and can be accessed by contacting the Hazardous Materials Branch of the Office of Merchant Marine Safety at Coast Guard Headquarters. DEGADIS will be incorporated within the HACS model during FY 1986 and at that time will become operational and available through the National Response Center.

Responses to Questions submitted by Senator Biden

1. Q. EPA and Coast Guard -- Waste Management wants to use the VULCANUS II for incineration operations in US waters. Is there a single regulation, as presently drafted by the EPA, that the VULCANUS II will not be able to meet? Are there any the VULCANUS I would not be able to meet?

A. There is no Coast Guard regulation that the VULCANUS I or VULCANUS II is not able to meet. VULCANUS I and VULCANUS II are required by Public Law 97-389 (96 Stat. 1954, 46 U.S.C. 883) to meet applicable Coast Guard regulations. The Coast Guard has evaluated the design of VULCANUS I and VULCANUS II and found these ships to comply with all requirements that are applied to U.S. incinerator vessels. The law also requires that these ships be inspected (including drydock inspections and internal examinations of the tanks and void spaces) to the same standards as U.S. vessels before loading and burning U.S. generated hazardous waste. Inspections of both ships are complete and both ships were found to be in compliance with applicable Coast Guard requirements. The Coast Guard has issued a Certificate of Inspection to VULCANUS II and VULCANUS I will soon receive a Certificate of Inspection.

4. Q. Coast Guard - Ocean incineration vessels are going to carry some of the most hazardous substances known to man. Yet no regulations, proposed or existing, require incinerator vessels to meet the highest standards for ships that the Coast Guard has available. Why aren't the highest standards required of these ships? Are there more hazardous substances than dioxin that are routinely transported by ship? What type of vessel requirements do you have for these materials?

A. Incinerator vessels typically carry mixtures containing hundreds of components, some of which are highly hazardous from a health standpoint but present in only low concentrations. The overall health hazards of the mixtures are generally comparable to those of commercial products which are routinely transported by ship. For example, dioxin, a contaminant formed during the production of certain herbicides, is found in very low concentrations in some types of wastes. It is believed to cause chloracne, metabolic disorders, and other systemic problems and is also a suspected carcinogen in man although scientific studies are thus far inconclusive. There are a number of other products routinely transported by ship which are equally hazardous in that they are also suspected human carcinogens and possess other potentially serious health effects. Examples include acrylonitrile, benzene, carbon tetrachloride, chloroform, and formaldehyde. Ships carrying these cargoes are required to have restricted or closed gauges and controlled venting with elevated vent risers to minimize vapor exposure to crew members. They are transported in type II or III vessels, depending upon the degree of hazard involved. These are the highest standards considered appropriate for cargoes possessing hazards of this nature. Incinerator ships incorporate all of these design features including ship type.

Ship type requirements are applied on the basis of the hazard a substance will pose if released to the environment. A ship type I is the highest standard. To date, the ship type I is only applied to a few chemicals such as phosphorus and chlorosulfonic acid which pose extreme flammability and reactivity hazards with water upon release. Incinerator vessels are required to meet requirements for a ship type II. A ship type II was chosen by the International Maritime Organization (IMO) when international requirements for incinerator ships were developed in the mid 1970's. At that time, IMO evaluated wastes which were being carried on incinerator ships. Based on their hazards and consistent with the assignment of ship type requirements to other commercially shipped hazardous materials, IMO determined a ship type II to be the most appropriate. The Coast Guard uses the IMO requirements for incinerator ships as the basis for its regulations applying to incinerator ships.

5. Q. Coast Guard — I realize that you believe the possibility is very low, but what would happen if there was a spill of liquid wastes? What would be the environmental effects of a spill of a shipment of the three products that are most likely to be burned aboard an incineration vessel? What is the Coast Guard's experience in cleaning up spills composed of different liquids? Are there any private companies with the capacity to clean up a spill that could be expected from an ocean incineration vessel? If so, what are their qualifications?

A. Without a specific scenario indicating the location of the release, the amount of material released, the cause of the release, and some idea of the basic content of the wastes released it is difficult to address this question in detail. Generally the Coast Guard predesignated On-Scene Coordinator (OSC) will evaluate the situation, determine the spiller's intentions and decide whether those actions are satisfactory. If the spiller is taking every action feasible, the Coast Guard OSC will monitor those actions. If they are not, the OSC will initiate a Federal cleanup. In the latter case, the Coast Guard would contract for one, or possibly more, of the major commercial cleanup contractors available throughout the country depending on the size and circumstances of the release. In any case, the OSC'S response organization will monitor the cleanup activities. Since the major chemical response cleanup companies are geared toward land incidents, the Coast Guard will probably provide logistical resources for the cleanup in either situation. Since the Coast Guard has no responsibility or capability for damage assessment determinations we cannot specify what the environmental impact of hazardous waste spill will be. The Department of the Interior and Department of Commerce would normally make these determinations.

STATEMENT

OF

GARRETT E. BROWN, JR.
ACTING DEPUTY MARITIME ADMINISTRATOR

ON

BEHALF OF

THE

MARITIME ADMINISTRATION
DEPARTMENT OF TRANSPORTATION

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
OF THE SENATE COMMITTEE
ON ENVIRONMENT AND PUBLIC WORKS

ON ISSUES CONCERNING THE INCINERATION OF
HAZARDOUS WASTE AT SEA

JULY 17, 1985

STATEMENT OF GARRETT E. BROWN, JR., ACTING DEPUTY MARITIME ADMINISTRATOR, MARITIME ADMINISTRATION, DEPARTMENT OF TRANSPORTATION, BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION OF THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS ON ISSUES CONCERNING THE INCINERATION OF HAZARDOUS WASTE AT SEA.

JULY 17, 1985

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE. MY NAME IS GARRETT E. BROWN, JR., AND I AM THE ACTING DEPUTY MARITIME ADMINISTRATOR OF THE MARITIME ADMINISTRATION. I APPRECIATE THE OPPORTUNITY TO APPEAR AT THIS OVERSIGHT HEARING. THE U.S. COAST GUARD OF THE DEPARTMENT IS ALSO REPRESENTED THIS MORNING, AND WILL PRESENT A SEPARATE STATEMENT.

THE MARITIME ADMINISTRATION'S (MARAD) DIRECT INTEREST IN THE INCINERATION OF HAZARDOUS WASTES AT SEA IS IN THE CONTEXT OF SHIPBUILDING OPPORTUNITIES AND THE DEVELOPMENT OF THE U.S. MERCHANT MARINE. THE ENVIRONMENTAL PROTECTION AGENCY (EPA), THROUGH THE DESIGNATION OF BURN SITES AND SETTING STANDARDS FOR THE ACTUAL INCINERATION, HAS THE MAJOR RESPONSIBILITY FOR THE INCINERATION OF HAZARDOUS WASTE AT SEA. WITHIN THE DEPARTMENT, THE U.S. COAST GUARD IS RESPONSIBLE FOR THE REGULATION OF THE DESIGN, CONSTRUCTION AND SAFE OPERATION OF ALL VESSELS BOTH AT SEA AND IN PORT.

REGULATORY RESPONSIBILITY FOR PROTECTING LIFE AND PROPERTY FROM THE RISKS ASSOCIATED WITH THE LAND BASED TRANSPORTATION OF HAZARDOUS MATERIALS AND HAZARDOUS WASTES IS VESTED IN SEVERAL OPERATING ADMINISTRATIONS OF THE DEPARTMENT OF TRANSPORTATION. THE RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION, WITH TECHNICAL

ASSISTANCE FROM THE OTHER OPERATING ADMINISTRATIONS, MAINTAINS A COMPREHENSIVE SET OF STANDARDS GOVERNING THE DESIGN, CONSTRUCTION, MAINTENANCE AND OPERATION OF TRUCKS TRAILERS, RAIL TANK CARS AND VARIOUS PORTABLE CONTAINERS USED BY ALL MODES OF TRANSPORTATION FOR TRANSPORTING WASTE AND ALL OTHER CATEGORIES OF HAZARDOUS MATERIALS. THE FIELD INSPECTION FORCES OF THE COAST GUARD AND OTHER ADMINISTRATIONS CARRY OUT COORDINATED MONITORING AND INSPECTION EFFORTS TO ASSURE COMPLIANCE WITH THOSE STANDARDS.

MARAD BECAME INVOLVED IN THE SUBJECT OF OCEAN INCINERATION IN THE MID-1970'S, WHEN MARAD AND EPA CONDUCTED A NUMBER OF STUDIES CONCERNING TECHNICAL, ENVIRONMENTAL, SAFETY AND ECONOMIC ISSUES OF INCINERATING HAZARDOUS WASTES AT SEA. DURING THIS PERIOD, THE 1978/79 INTERNATIONAL STANDARDS FOR INCINERATION AT SEA WERE DEVELOPED AND APPROVED UNDER THE AUSPICES OF THE INTERNATIONAL MARITIME ORGANIZATION. EPA HELPED DEVELOP THESE STANDARDS, AND MARAD ASSISTED EPA ON TECHNICAL MATTERS.

INCREASING INTEREST IN OCEAN INCINERATION RESULTED FROM THE EVER-RISING ACCUMULATION OF HAZARDOUS WASTES IN THE UNITED STATES. BY 1980, 57 MILLION METRIC TONS OF INDUSTRIAL HAZARDOUS WASTES WERE PRODUCED (ACCORDING TO EPA).

THE SERIOUS ENVIRONMENTAL AND PUBLIC HEALTH PROBLEMS ASSOCIATED WITH DISPOSAL SITES PROMPTED FEDERAL AGENCIES TO STEP-UP EFFORTS TO EXAMINE TECHNOLOGIES FOR TREATMENT AND DESTRUCTION OF WASTE MATERIALS. HIGH TEMPERATURE INCINERATION WAS FOUND TO BE THE MOST EFFECTIVE WAY TO DESTROY COMBUSTIBLE HAZARDOUS WASTES.

In February 1980 an interagency work group consisting of representatives of EPA, MARAD, Coast Guard and the National Bureau of Standards undertook a study of ocean incineration and the alternatives available to the Federal Government for encouraging the design, construction, and operation of U.S.-flag incinerator ships. The work group examined previous incineration operations, various Federal assistance programs, safety and control measures incinerator ship conceptual designs, environmental impacts, and waterfront facilities. In September 1980, the work group issued its report and concluded that chemical waste incineration at sea, aboard specially designed and equipped ships, is "an effective and environmentally acceptable technology" for destroying combustible liquid hazardous chemical wastes. It further concluded that an accelerated and coordinated Federal effort should be instituted to establish chemical waste incinerator ship capabilities in the United States.

By memorandum of October 8, 1980, the Administrator of EPA and the Assistant Secretary of Commerce for Maritime Affairs noted the serious environmental and public health problems associated with on land storage of toxic chemical wastes. They approved the recommendation issued by the work group, with the comment among others, that strong emphasis shall be placed on utilization of privately-owned U.S.-flag incinerator ships.

As a result of the October, 1980, agreement between MARAD and EPA, the work group was expanded and redesignated the Interagency Review Board for the Chemical Waste Incinerator Ship Program (IRB).

THE PURPOSE OF THIS BOARD WAS TO MONITOR AND COORDINATE FEDERAL GOVERNMENT ACTIVITIES RELATED TO DEVELOPING U.S.-FLAG INCINERATOR SHIP CAPABILITIES IN THE UNITED STATES. MARAD'S CHIEF INTEREST IN THE WORK OF THIS BOARD AND IN THIS SUBJECT OVERALL WAS TO ENCOURAGE THE CONSTRUCTION OF THE MOST SUITABLE AND SAFE VESSELS IN U.S. SHIPYARDS, AND THEIR OPERATION UNDER THE U.S.-FLAG.

ON NOVEMBER 18, 1980 MARAD RECEIVED AN APPLICATION FOR GUARANTEES FROM AT-SEA INCINERATION, INC., TO AID IN THE FINANCING OF TWO INCINERATOR VESSELS UNDER THE TITLE XI PROGRAM. THE TITLE XI PROGRAM IS A GUARANTEE PROGRAM ESTABLISHED BY THE MERCHANT MARINE ACT, 1936, AS AMENDED, THAT PROVIDES FOR A FULL FAITH AND CREDIT GUARANTEE BY THE U.S. GOVERNMENT OF DEBT OBLIGATIONS ISSUED BY U.S. CITIZEN SHIPOWNERS FOR THE PURPOSE OF FINANCING OR REFINANCING U.S.-FLAG VESSELS CONSTRUCTED OR RECONSTRUCTED IN U.S. SHIPYARDS. THE TITLE XI PROGRAM ENABLES OWNERS OF ELIGIBLE VESSELS TO OBTAIN LONG-TERM FINANCING ON FAVORABLE TERMS AND CONDITIONS AND AT INTEREST RATES COMPARABLE TO THOSE AVAILABLE TO LARGE AND FINANCIALLY STRONG CORPORATIONS. FUNDS SECURED BY THE GUARANTEED DEBT OBLIGATIONS AND USED FOR FINANCING THE VESSELS ARE OBTAINED IN THE PRIVATE SECTOR. EACH PROJECT MUST BE DETERMINED TO BE ECONOMICALLY SOUND, AND THE PROPOSED SHIPOWNER AND/OR OPERATOR MUST MEET MANAGEMENT AND FINANCIAL CRITERIA. THE BASIC FINANCIAL AND COLLATERAL REQUIREMENTS IMPOSED ON THE SHIPOWNER INCLUDE FUNDING EQUITY AT A MINIMUM OF 25 PERCENT OF THE TOTAL CONSTRUCTION COST OF THE VESSEL. THE SHIPOWNER IS ALSO REQUIRED TO HAVE WORKING CAPITAL ADEQUATE TO FUND ONGOING OPERATIONS AND HAVE AN ADEQUATE NET WORTH POSITION.

In April 1982, MARAD issued a Title XI Letter commitment to finance the construction of two U.S.-flag vessels, outfitted with incinerators. MARAD'S decision to proceed with the project was based on favorable supporting technical evidence, and economic projections. Although EPA had not yet promulgated permitting regulations for incineration at sea, because of the long lead time required in ship construction projects, MARAD did not delay commencement of the project. Further, EPA's Administrator Costle's approval of the Interagency work group report and recommendations in October 1980 signified to MARAD EPA's desire to see the early development of At-Sea Incineration capability in the United States. Moreover, EPA permits and regulations were in place for land based incineration of toxic chemical wastes. Hence, there was no reason to expect a delay by EPA in promulgating regulations for ocean incineration of toxic chemical wastes.

The ships are now under construction at Tacoma Boatbuilding Company (TBC) under a $92.5 million contract. The government's guarantee is $69.4 million; bonds have been issued for $59.9 million; with the bonds for the remaining $9.5 million to be issued at the delivery of the first vessel. The bonds have a term of 20 years and are payable semi-annually. The shipowner is At-Sea Incineration, Inc. (ASI). ASI is 70 percent owned by the shipbuilder, TBC, and 30 percent by Apollo Marine Corporation. Upon delivery, the vessels will be managed and operated by Apollo Marine Corporation, a subsidiary of Apex Marine.

After the Apollo Letter Commitment was approved, the General Accounting Office, at the request of Congress, reviewed the Apollo loan guarantee. The General Accounting Office filed no report. We understand they found no basis to question either the legality of the guarantee or the determination of the economic soundness of the project.

Since approval of the Apollo Letter Commitment Congress passed Legislation (P.L. 97-389) which designates the transportation of hazardous waste from a port in the United States for incineration at sea as so-called Jones Act or domestic trade. The trade is therefore limited by law to U.S.-flag vessels which are built in the United States, owned by U.S. citizens and crewed by Americans. Two existing foreign-built incinerator ships, the VULCANUS I and VULCANUS II, were given "Grandfather" rights in the same legislation, provided explicit conditions for their inspection and outfitting were met. These ships are now owned by an American company.

Despite some delays in construction, the first incinerator vessel is estimated by the shipyard for delivery this month and the second vessel for delivery in late December. As with any start up enterprise, if significant additional delays are encountered including necessary EPA permitting, ASI will require additional capital to meet its financial commitments. If ASI were to default on its Title XI payments, the Government is obligated to honor its guarantee.

MARAD continues to maintain contact with EPA and regularly reviews the status of the permitting process. MARAD has also commented on the draft proposed ocean incineration regulations.

MARAD believes that the construction of the first two U.S. incinerator ships is an important step in a program to develop other industrial plant vessels for multiple uses. The construction of plant vessels represents an important future market for American shipyards.

Mr. Chairman. That concludes my prepared statement. I will be pleased to answer any questions that you or the Members of the Subcommittee may have.

U.S. Department
of Transportation
**Maritime
Administration**

Administrator

400 Seventh Street, S.W.
Washington, D.C. 20590

AUG 27 1985

The Honorable Lloyd Bentsen
Committee on Environment
and Public Works
United States Senate
Washington, D.C. 20510

Dear Senator Bentsen:

Enclosed are the responses to the questions you sent to me following the hearing held on July 17 before the Subcommittee on Environmental Pollution concerning ocean incineration.

Please let me know if I can be of further assistance.

Sincerely,

Richard E. Bowman
FOR
GARRETT E. BROWN, JR.
Acting Deputy Maritime
Administrator

Enclosure

Question No. 1: Has the Maritime Administration provided any loan guarantees to Tacoma Boatbuilding apart from those to At-Sea Incineration, Inc.?

If so, has the company ever defaulted on a loan backed by a MARAD guarantee?

Answer:

The Maritime Administration has provided no loan guarantee to Tacoma Boatbuilding Company.

Question No. 2: Was any consideration given to the possibility of what would happen if ocean incineration permitting were not available to At-Sea Incineration, Inc. before the loan guarantees were granted?

Answer:

MARAD did not believe that there was a significant possibility that operating permits would not be granted by EPA to At-Sea Incineration. MARAD's decision to issue bonds followed an interagency study, co-chaired by EPA and MARAD, which recommended that an accelerated and coordinated Federal effort be instituted to establish chemical waste incinerator ship capabilities in the United States. Given the EPA Administrator's endorsement of that recommendation, MARAD believed sufficient lead time existed (over three years) for EPA to establish necessary operational criteria and permitting procedures, and for At-Sea Incineration to apply for and receive a permit.

Question No. 3: The Apollo I and II can serve as Type II bulk chemical tankers as well as incinerator ships. Was any consideration given to requiring the Company to have an alternative plan for commercializing these ships to assure the safety of the loan guarantees before they were provided?

Answer:

Many of the features required on incinerator ships are unique to their operation. In their present configuration, there are no alternative uses for the Apollo vessels. Reconstruction for an alternative use would not be economically feasible.

Question No. 4: If incinerator vessel permitting does not go forward and At-Sea Incineration, Inc. defaults on the loans what legal and procedural steps are available to MARAD to recover the cost of repaying the loans?

Can MARAD seize the ships?

If so, what would the agency do with them? What are the precedents for this type of action?

Answer:

If At-Sea Incineration defaults on the loans, MARAD would have to pay off the bondholders. In the event of such a pay-off, MARAD would foreclose its lien on the collateral and would bid at a foreclosure sale. If MARAD obtains the vessels, MARAD may either: 1) hold the vessels in lay-up until EPA is prepared to receive and act on applications for permits; 2) sell the vessels immediately; or 3) possibly charter the vessels. If ASI defaults before the vessels are delivered, MARAD may require performance under a Performance and Payment Bond issued by Industrial Indemnity Company (IIC) and the Construction Contract. IIC could negotiate a settlement or complete the vessels pursuant to the Construction Contract.

In the past, MARAD has experienced difficulties taking possession of defaulted equipment. The Administration will forward legislation to Congress which will improve MARAD's ability to seize assets under bankruptcy.

Question No. 5: What is the status of the Maritime Administration's loan guarantee fund?

Answer:

As of July 1985, the Federal Ship Financing Fund did not have sufficient resources to meet current demands, requiring MARAD to borrow from Treasury to meet its obligations. Borrowings to date total $75 million. Payment on any defaulted obligations will require additional borrowings.

CALYPSO

The Cousteau Society

5 June 1985

Mr. Bob Hurley
Environment and Public Works Committee
Dirksen Senate Office Building
Room SD - 410
Washington, DC 20510

Dear Mr. Hurley:

Enclosed you will find our comments on the need for and the practicality of ocean incineration to be submitted to the Subcommittee on Environmental Pollution for its hearings on ocean incineration June 19th and July 17th.

This document was compiled by Dr. Richard Murphy, Director of Science and Education for the Cousteau Society, and myself. If you have any questions, please contact us.

Sincerely,

Neal Shapiro

Neal Shapiro
Environmental Research & Policy

Enclosure

The Cousteau Society Inc 8430 Santa Monica Boulevard Los Angeles California 90069 (213) 656-4422

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CALYPSO
The Cousteau Society

THE COUSTEAU SOCIETY

COMMENTS ON DRAFT REGULATIONS FOR OCEAN INCINERATION

4/22/85

Before addressing the Regulation (Reg), we feel the need to comment on EPAs approach to toxic waste destruction from a broader perspective.

On the positive side, we are heartened to see that EPA has involved the Science Advisory Board in evaluating the incineration issue - work completed to date and the areas needing further work. We hope EPA's continues to work closely with this group as their expertise can, in the long-run, save EPA considerable time and money in the design and evaluation of many aspects of the toxic waste incineration issue.

We are pleased to see that EPA appears to have understood the message from the public that a serious investigation of the costs, benefits, risks, needs and alternatives to ocean incineration is needed. It is encouraging that EPA has finally conducted an Incineration Study, a logical first step, and we see an improvement in the present research strategy over previous EPA research plans.

From our perspective, which focuses on the protection and improvement of the quality of life for present and future generations, we believe it is absolutely essential to keep in mind the ultimate objectives toward which we all should be striving. Regarding toxic wastes the goals should be: to eliminate the production of toxic wastes in the first place. If they must be produced, then society must strive to eliminate or reduce the transportation necessary for their destruction. Ideally no toxic wastes should leave the boundaries of the production facility or location where they are presently held. Rather than transporting wastes to a destruction facility, The Cousteau Society favors an approach in which a mobile destruction unit travels to the waste.

Consequently, The Cousteau Society favors on-site destruction of toxic wastes by mobile systems over stationary land-based systems. We feel these systems are preferable to shipboard use of incineration systems, primarily because the incidence of spills and leaks increases with transportation and because the effectiveness of clean-up, particularly in the ocean, decreases dramatically the greater the distance from shore.

Although these broad perspectives and general priorities are implied in RCRA and EPA mandates, we feel the need to emphasize them because, as the Science Advisory Board draft report states, "In the course of rapid development of incineration technologies, there appear to have been inadequate resources devoted to a holistic and scientific review of these technologies regarding their environmental acceptability" and that they "have suffered from a lack of planning and integration. The scientific method was apparently replaced by a disorganized, random-access approach... it has more importantly resulted in significant voids and deficiencies." (SAB, pp 15,47).

More specific comments directed toward the proposed Regulation follow.

LEGAL CONSIDERATIONS

We feel the intent of the London Dumping Convention to which the the United States is a signatory (Regulation 2.2) is clear in attempting to prevent the release of, or possibility of release of, toxic wastes at sea and is clear in favoring land-based disposal or treatment. LDC documents state, and EPA Reg quotes (pp 19; Section 234.50, pp 67), "every effort should be made to determine the practical availability... of alternative land-based methods of treatment, disposal or elimination, or of treatment to render the matter less harmful for dumping at sea, before issuing a permit for incineration-at-sea." Based on this, it seems clear that need exists when there is no "practical availability... of alternative land-based methods..."

EPA seems aware of this, citing, "the "need" for ocean incineration in a manner consistent with the foregoing discussion," but contradicts what we feel is the intent of the LDC, by stating that need will be "demonstrated if ocean incineration poses... no greater risks than practicable land-based alternatives." In other words, EPA states that need for ocean incineration exists even if there are "practicable alternative land-based methods" available; the LDC states the exact opposite. EPA justifies this conflict with the LDC on the issue of need with, "Although this is somewhat different from its (LDC's) treatment of need in the context of ocean dumping, the nature of ocean incineration activities justifies the difference."

EPA's contradiction and violation of the LDC becomes more obvious when it acknowledges, on the the subject of Transportation and Loading Issues (Incineration Reg pp. 11), "However, were a spill to occur at the incineration site in water of at least 2,000 feet, it is unlikely that much of the wastes could be recovered." It is also unlikely that spilled wastes in shallow waters along coastlines or in harbors could be recovered before being dispersed by tidal currents and wave action.

Further inconsistency is evident in EPA's consideration of the length of ocean incineration operating permits as the Reg (pp 31) states that EPA could modify the permit if "there is no longer a need for the ocean incineration of a particular hazardous waste based on the availability of practical land-based destruction alternatives for that particular hazardous waste." The Reg (pp 68) continues their present criterion of "need", in the context of five year reevaluations, "If any of these alternatives become practicable and clearly pose on balance less risk than ocean incineration for these wastes, new ocean incineration permits would not be issued for the incineration of those wastes." EPA seems to be saying that we will permit ocean incineration now, even if land-based alternatives exist, but in the future, if land-based alternatives exist, we will not permit ocean incineration.

The Incineration Study, Assessment of Incineration as a Treatment Method for Liquid Organic Hazardous Wastes, made public in March, 1985 concludes that presently there is a need for ocean incineration because there is a greater need than there is capacity for on-land incineration of toxic wastes, particularly PCBs, and that this unmet need will increase in the future. Upon contacting two of the largest land-based toxic waste incineration companies (ENSCO, Rollins) we found these EPA conclusions to be false. There is and can be additional capacity to incinerate PCBs and other toxic wastes. Responses to our written inquiries are attached.

We realize EPA is in a very difficult position because of its involvement with the Maritime Administration which has committed millions of dollars in loan guarantees for the construction of incineration ships, but the EPA must put Environmental Protection first and foremost before politics and pressure from special interest groups.

We urge EPA to be consistent and stick to the intent of the LDC by allowing incineration-at-sea permits to be considered ONLY where there are NO PRACTICAL LAND-BASED ALTERNATIVES! Presently there are land-based alternatives and thus ocean-incineration cannot be justified. Letters substantiating this are attached.

TRANSPORTATION

EPA documents indicate the risks associated with transportation on-land and transportation at-sea are generally comparable (Reg pp. 9) and that transporting toxic wastes is not particularly different from handling any other hazardous substances (Reg pp. 11-12). To the contrary. The SAB states in its draft report (pp 23), "motions of the incinerator ship on an open sea may increase the probability of spillage. The motion of the ship may also create problems for the stable operation of the incinerator. No detailed analyses of these issues were presented to the Committee." As Captain Cousteau testified, we can think of no worse place than the sea to attempt to destroy toxic substances. From our experience on ships we know that the chances of mechanical failure and human error increase dramatically at sea. Such a sophisticated and important process should take place in the most stable and controlled environment possible. Clearly, the open ocean is not such an environment.

With the assumption that EPA's goal is to protect the environment from some of the most toxic substances known, we do not understand why EPA has not at least required Type I vessels which have the highest safety specifications for carrying hazardous materials. We urge EPA to require Type I vessels for ocean incineration.

We have mentioned the problem of spills and clean-up above, but must re-emphasize that fluids containing toxic waste, will be orders of magnitude more difficult to clean up at sea than on land, if they can be cleaned up at all. On the subject of contingency plans and clean up (Reg, pp 44), we feel the Reg must require a permittee to show proof that it is possible to clean up a spill. There must be cleanup firms in the vicinity which have the demonstrated capability of cleaning up such wastes. This demonstrated capability should be confirmed by both the Coast Guard and EPA. If there are no firms which can demonstrate that wastes can be cleaned up at the incineration site or the ocean route to the site, then the permits should not be granted.

The SAB concludes in its report, "Nearly all types of hazardous waste management practice involve the collection, transport, temporary storage, pumping, and valving of the wastes. All of these processes are subject to partial and complete failures, and spills and fugitive emissions have occurred." It is obvious to us that transportation of toxic wastes should be minimized or eliminated, thus directing us to favor mobile land-based systems over stationary land-based systems, and these over ocean incineration systems. We are pleased that the Agency is working with on-site incinerators as described on pp. 20.

APPLICANTS' PAST HISTORY

Contrary to the Agency's decision, we feel an applicants' past history should be considered in the criteria for evaluating permit applications. The Reg states, "equitable criteria were impossible to develop." Under difficult conditions in the open sea, hundreds of miles from public scrutiny (even though there is an observer on board) we believe that there will be opportunity for a permittee to fail to perform to the letter of the Reg. Whether it is equitable or not, the practical reality in society is that we do not hire convicted bank robbers as security guards in banks. This does not deny waste managers opportunity to become involved in other business activities.

Consequently, we urge EPA to address the issue of past history and deny permits to applicants who have been convicted of, or are presently being prosecuted for, environmental violations.

LIABILITY

EPA's concern that "cleanup and mitigation measures for a large spill of hazardous substances could potentially result in costs of hundreds of millions of dollars" (Reg Section 234.10, pp 34) appears to be influenced more by maritime and waste management interests than by its mandated priority of environmental protection.

Referring to the question on pp 37 - "Would an insurance requirement at the upper ranges of $500 million be unavailable or too expensive for entrance into the ocean incineration market?" suggests ocean incineration could be considered, primarily, as a profit making venture.

It is our position that the price of incinerating at sea should reflect the true and complete costs of incinerating at sea, including whatever insurance rates reflect costs of accidental spills. The toxic waste problem that society faces today is a direct result of not including environmental costs into the true production costs. If clean up and liability costs are so expensive as to make ocean incineration prohibitive, then we should accept that reality and conclude that ocean incineration is not a viable alternative. Not accepting this will perpetuate the short-term approach for which future generations will pay, in health and in money. The fallacy of this approach ought to be clear to an organization which is even now paying to cleanup earlier slap-dash waste disposal.

We are also concerned that EPA will be able to reduce the amount of liability insurance required by a permittee if EPA were convinced by that operator that a lesser amount was justified (Reg Section 234.10, pp 34). The public needs better assurance that the environment will be given greater protection than will the waste management businesses. We suggest the Reg include a stipulation that a third party approve any variance to the requirement.

INCINERATION

We urge EPA to modify its approach to combustion efficiency and destruction efficiency (Sections 234.2, pp 15; 234.47, pp 60;

234.48, pp 64) according to comments by the SAB. The SAB draft report states, "It is clear that relying on destruction efficiencies, DE, as presently defined, to estimate the quantity and quality of generated incinerator emissions is scientifically inappropriate."

We also believe the SAB pointed out an important limitation in the way destruction efficiency is determined in shipboard tests. "Research on the performance of incinerators has been conducted only under optimal burn conditions and sampling has been discontinued during upset conditions, which occur with unknown frequency." SAB suggests, "The determination of the actual emissions and effluents of an incinerator to the environment must assess the total mass loadings to the environment under all conditions of incineration." We agree.

ENVIRONMENTAL MONITORING

EPA has relied heavily on the use of mathematical models in predicting the fate of incineration products and thus in developing a monitoring program. The effectiveness of this approach depends upon the validity of the model. The SAB has consistently criticized EPA's ocean and atmospheric models, stating in the draft report (pp 55-56 & 66) that environmental transport and fate of chemicals "had been evaluated for land based incinerators essentially on the basis of computer modeling along with little or no field verification. In the case of ocean based incinerators, the field measurements were found to be largely inadequate...The results from these large scale simulations are unconvincing, especially when they are not supported by field validations."

A case in point is the discussion of performance standards (Reg Section 234.48, pp 62) for determining the carrying capacity for incineration of wastes at a particular site. One component in the calculation is the dilution of wastes which is based on the assumption that mixing will take place to a depth of 20 meters within four hours, whereby a considerable amount of wastes can be diluted to "acceptable" concentrations. This model is flawed for a number of reasons. It does not consider the fact that wastes will be concentrated at the sea surface microlayer and that many organisms inhabit or visit this microlayer because it is a site of concentrated organic matter. Organic matter and organisms then become involved in biological concentration and magnification. Likewise, the dilution assumption is inappropriate in areas, such as California, where upwelling events can entrain surface waters, reducing the depth of the thermocline, thus reducing the volume of water in which toxic materials will be diluted. The SAB concludes, "Agency's evaluations have placed emphasis on dilution, but have not effectively addressed mechanisms in the environment which would result in the concentration of emission products."

The Reg states (pp 63) that EPA criteria will "be based on a demonstration through the use of an EPA-approved mathematical plume and oceanic dispersion model..." Because of the importance of the model in determining other aspects of the monitoring program, we suggest the Reg be changed to state "EPA and SAB-approved." We admit that the calculation of carrying capacity is a very complex and difficult problem and urge EPA to collaborate as closely as possible with the SAB in the development of monitoring protocols and carrying capacity criteria.

EPA proposes that permittees participate in the monitoring program (Section 234.60, pp 80). We do not feel this is a good idea and instead propose that the permittees participate only to the degree that they fund a third group who actually does the monitoring, that the actual transfer of funds be conducted through EPA, and that selection of those involved in monitoring be done by EPA and not by the permittee.

Regarding monitoring and the designation of incineration sites (Subpart G, pp 85,88), we propose the wording be changed to stipulate that the determination of carrying capacity (Section 234.78b) and an environmental monitoring plan be determined or implemented before each site is approved for possible incineration activity.

In calculating the carrying capacity no attention has been given to biological accumulation (Section 234.77, pp 87-88). We are convinced that there is a high probability of incineration by-product concentrations in the surface microlayer and associated biota much greater than in the water column.

Consequently, we urge EPA to work closely with the SAB in revising these criteria to include components of the system which may reflect by-product accumulation (concentration).

We are pleased to see the Reg include a monitoring program (Section 234.79, pp 89-91) and that statistical criteria are considered in evaluating adverse effects. We feel, in addition, the Reg should state that when statistically significant increases in waste or by-products are found in a certain number of taxa or trophic levels or organisms occupying a particular habitat, incineration in that area be terminated. Without developing criteria for upper or acceptable levels of pollutants, the monitoring program could become an academic exercise passively measuring and observing the degradation of the environment.

We feel it is important to add a statement in Reports (Section 234.81, pp 91): complete data on the impact of incineration on each site will be available upon request, and public announcement of its availability will be made promptly after being received by EPA.

We are concerned about inconsistencies in the Reg and Research Strategy (published Feb. 19, 1985) regarding organisms which will be used to measure biological effects. The Research Strategy calls for a variety of organisms, including indigenous organisms, and tests on biological processes will be tested. Furthermore, in the Environmental Performance Standards discussion (Section 234.48, 40 CRF Part 234, pp 33) the use of the words "concentration shown to be acutely toxic to appropriately sensitive marine organisms" suggests that sublethal effects will not be considered, contradictory to the Research Strategy recommendations. We are also concerned that standard laboratory test organisms will be used, which are characteristically among the most hardy species, rather than organisms indigenous to the site of incineration. We believe assessment must include the physiological consequences of these substances on standard test organisms AND indigenous organisms and that "EPA-approved procedures" should also be SAB-approved procedures.

ADDITIONAL COMMENTS

We believe the regulation should be changed to reflect the following: the best available technology should be required, adjudicatory hearings should not be eliminated, and ten-year permits should be reduced to three years.

CONCLUSIONS

The Cousteau Society applauds EPA on expanding its consideration of important toxic waste incineration issues and on beginning to address the subject in a scientific manner. We disagree with the way in which EPA is dealing with the "needs" issue as it relates to the LDC. We are very concerned that interest groups are influencing EPA policy as it relates to providing business opportunities for industry versus protecting the environment. We encourage EPA to support the development of mobile destruction systems which could reduce transportation and thus the risks of significant waste release into the environment.

SUMMARY

We urge EPA to be consistent and stick to the intent of the LDC by allowing incineration-at-sea permits to be considered ONLY where there are NO PRACTICAL LAND-BASED ALTERNATIVES!

We urge EPA to require Type I vessels for ocean incineration.

We feel the Reg must require that the permittee show proof that there are cleanup firms in the vicinity which have the demonstrated capability of cleaning up such wastes. This demonstrated capability should be confirmed by both the Coast Guard and EPA. If there are no firms with demonstrated capability, permits should not be granted.

It is obvious to us that transportation of toxic wastes should be minimized or eliminated, thus directing us to favor mobile land-based systems over stationary land-based systems, and these over ocean incineration systems.

Consequently, we urge EPA to address the issue of past history and deny permits to applicants who have been convicted of, or are presently being prosecuted for, environmental violations.

CALYPSO
The Cousteau Society

It is our position that the price of incinerating at sea should reflect the true and complete costs of incinerating at sea, including whatever insurance rates reflect costs of accidental spills.

Regarding liability variances, We suggest the Reg include a stipulation that a third party approve any variance to the requirement.

We urge EPA to modify its approach to combustion efficiency and destruction efficiency (Sections 234.2, pp 15; 234.47, pp 60; 234.48, pp 64) according to comments by the SAB.

We urge EPA to collaborate as closely as possible with the SAB in the development of monitoring protocols and carrying capacity criteria.

We do not feel it is a good idea to have incinerators involved in monitoring and instead propose that the permitees participate only to the degree that they fund a third group who actually does the monitoring, that the actual transfer of funds be conducted through EPA, and that selection of those involved in monitoring be done by EPA and not by the permittee.

Regarding monitoring and the designation of incineration sites (Subpart G, pp 85,88), we propose the wording be changed to stipulate that the determination of carrying capacity (Section 234.78b) and an environmental monitoring plan be determined or implemented before each site is approved for possible incineration activity.

Consequently, we urge EPA to work closely with the SAB in revising carrying capacity criteria to include components of the system which may reflect by-product accumulation (concentration).

On the subject of monitoring, We feel the Reg should state that when statistically significant increases in waste or by-products are found in a certain number of taxa or trophic levels or organisms occupying a particular habitat, incineration in that area be terminated. Also, we feel it is important to add a statement in Reports (Section 234.81, pp 91): complete data on the impact of incineration on each site will be available upon request, and public announcement of its availability will be made promptly after being received by EPA.

We believe assessment must include the physiological consequences of these substances on standard test organisms AND indigenous organisms and that "EPA-approved procedures" should also be SAB-approved procedures.

In addition we believe the regulation should be changed to reflect the following: the best available technology should be required, adjudicatory hearings should not be eliminated, and five and ten year permits should be reduced to three years.

Rollins Environmental Services, Inc
One Rollins Plaza Wilmington Delaware 19899
(302) 429 2960

Rollins

April 12, 1985

Mr. Richard C. Murphy
Director of Science and Education
The Cousteau Society, Inc.
8430 Santa Monica Boulevard
Los Angeles, CA 90069

Dear Mr. Murphy:

Thank you for taking the time to contact us recently. We were indeed interested to learn of Captain Cousteau's ongoing concern about the need for and the risks associated with incineration-at-sea. As a company, we too are perplexed about the U.S.E.P.A.'s determination of need under the London Dumping Convention. As you correctly stated, a signatory nation cannot avail itself of ocean incineration technology if there is landbased capacity available. As you know, the U.S.E.P.A. contends that there is no remaining landbased capacity for PCB incineration, therefore, an at-sea incineration program is appropriate. However, our responses to your questions will, we believe, cast some doubt on this premise.

Your questions to Rollins were as follows:

1 & 2 Do you believe there is the on-land capability to incinerate existing toxic waste, including PCB, at this time? Do you believe there is the potential to expand on-land capacity for the destruction of additional toxic wastes (PCB)?

Answer: Rollins Environmental Services operates three land based rotary kiln incinerators. As a company, our capacity for the incineration of toxic chemical wastes is not used up. We continue to be aggressive in the market place in terms of soliciting new business for these incinerators.

Our facility in Deer Park, Texas is permitted to destroy PCB contaminated wastes and has demonstrated its ability to destroy these wastes to the required 99.9999%. Our facility in Baton Rouge, Louisiana and in Bridgeport, New Jersey are mirror images of our facility in Deer Park, Texas with the exception that each of these plants has a newer and more sophisticated air emissions control system installed and operating. We have applied for PCB permits at each of these facilities in early 1984 and late 1983, respectively. Given that the air emissions control technology is newer and that the incinerator design is the same as the design for our Texas plant, there is every reason to believe that both of these plants will be able to achieve the required "six 9's" destruction efficiency required by the U.S.E.P.A. for a PCB permit under the Toxic Substances Control Act.

However, due to political pressure and bureaucratic delay, we have not even been authorized to conduct a test burn at either facility. While we are satisfied to go through the test burn process for each of our facilities, we would be remiss if we were to fail to note that the U.S.E.P.A. proposes to permit mirror image incinerators aboard different Vulcanus ships based upon test burn data from only one of the incinerators. If this same standard were applied on land, PCB incineration capacity could be nearly doubled immediately.

3. Do you belive there will be an increase in PCB wastes to be destroyed over the next few years?

Answer: It is our view that the great majority of the PCB chemical present in the United States could be effectively destroyed using landbased incinerators by the early 1990's because the manufacture of PCB's is banned. The stock is finite and because existing stocks are, for the most part, in the hands of electric utilities, they have been well inventoried.

In addition, the U.S.E.P.A. has stringently regulated how these chemicals must be handled and when the equipment which contains them is to be taken out of service. The upshot then, is that the finite amount of chemical, the stringent regulation and the ability to accurately inventory the material makes it possible to destroy these materials in a planned and orderly way.

The only unknown in the equation is to what extent PCB contaminated materials may be found at Superfund sites. Given the nature of Superfund sites, however, it is not likely that there will be high volumes of high concentration PCB contaminated materials found there. Rather you could expect to see soil and water contaminated with PCB's at low concentrations. What this means is that PCB contamination in Superfund sites may not impact on incineration capacity to a great degree because other destruction or treatment technologies, such as the Rollins Environmental Vault, may be more appropriate for these low level contaminated materials which do not pose an immediate environmental threat.

Furthermore, it is likely that most PCB materials coming from a Superfund site will be highly viscous in nature making them unsuitable for destruction in liquid at-sea incinerators. As of now, all such sludge-like materials must be handled by rotary kiln technology which exists (or has been engineered) at landbased facilities.

Finally, we by no means are retrenching in the PCB marketplace due to capacity concerns. We continue to sell our service and schedule PCB's for destruction and expect to continue doing so for the forseeable future.

We greatly appreciate the opportunity to communicate this information to the Cousteau Society and would certainly encourage you to keep in touch with us whenever we may be of service.

Sincerely,

Thomas R. Blank

Thomas R. Blank
Director of External Affairs

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April 17, 1985

Mr. Richard C. Murphy, Ph.D.
Director of Science and Education
THE COUSTEAU SOCIETY
8430 Santa Monica Boulevard
Los Angeles, California 90069

Dear Dr. Murphy:

This is in response to your letter of April 10.

Incinerators which are not authorized to burn PCBs typically operate at only 50-75% of capacity. In general until very recently the PCB authorized incinerators operated at capacity. However we have continuously increased the capacity of our El Dorado, Arkansas plant and since the last significant capital expansion in September, 1984 have had the capability of burning more PCBs than we receive in an average month. But we have found that there simply are no more PCB materials coming out of service to fill this potential gap in our throughput. Consequently it is my conclusion based on what is actually happening in the marketplace as opposed to what someone might project out of a study, that at present there is more than adequate capacity on land to handle wastes which are subject to incineration. Because manufacture of PCBs has been banned since 1978 and there will never be any PCBs to destroy that do not presently exist, the amount of PCBs to handle will decrease in the future. Some market analysts are projecting that there will be a significant increase in non-PCB waste directed off site to incineration over the next several years because of provisions of the RCRA Reauthorization Bill adopted in October 1984 and tightening regulation by the EPA. Similar predictions were made at the time of the initial adoption of RCRA in 1976 and never have materialized. It is my opinion that the large generators of wastes will take steps either to concentrate the waste or to handle it on the generator's site and that there will not be any significant increase in the quantity of wastes from large generators. Because RCRA reauthorization makes the regulatory machinery apply to generators of a much smaller quantity than previously, there may be some increase in wastes directed to incineration by those industries. However I think it improbable that those quantities will exceed the capacity of the incineration industry as it now exists.

Our analysis of the market has convinced us that there are two likely sources of RCRA wastes to be treated at the ENSCO El Dorado plant, concentrated sludges from large generators and a variety of wastes from small generators. Most of that material will not be capable of incineration by the presently existing ocean incineration vessels because they can only handle screened liquids. Indeed I anticipate in the not too distant future that the clean waste liquids will be incinerated at a very low per pound cost because they will be necessary as a fuel to burn the sludges and solids.

There will be significant permitting problems for any new land based incineration. To solve that problem ENSCO has developed modular (mobile) incinerations, two of which are presently in operation, and which can be transported over the highway to a reclamation site or a site where waste is generated. Each of these units has a capacity of approximately 1/5 of our fixed based site at El Dorado and require only approximately a 6 month lead time to be manufactured and placed in service. Units of this kind, whether manufactured by us or others, will be more than adequate to fill any shortage of capacity for incinerable waste.

Yours truly,

H. Clay Robinson
President/COO

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CALYPSO

The Cousteau Society

Our inclusion of these letters is not an endorsement of Rollins or Ensco, but rather proof that there is not a need for ocean incineration of toxic wastes, because there exists additional on-land capacity.

TESTIMONY ON ENVIRONMENTAL PROTECTION AGENCY PROPOSED REGULATIONS ON OCEAN BURNING OF TOXIC WASTE
SUBMITTED TO
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION

JUNE 19, 1985

BY FRANK DROZAK, PRESIDENT
SEAFARERS INTERNATIONAL UNION OF NORTH AMERICA

On behalf of the Seafarers International Union of North America (SIU), AFL-CIO, I appreciate the opportunity to submit testimony with regard to the proposed regulations of the Environmental Protection Agency for incineration of hazardous wastes at sea. The Seafarers International Union represents 90,000 men and women employed on U.S.-owned and operated oceangoing, Great Lakes and inland waterways vessels, many of whom could be employed on U.S.-flag incinerator vessels if the United States moves forward with an ocean incineration program. In addition, the Seafarers International Union represents fishermen and cannery workers, as well as allied marine workers.

The Seafarers International Union supports the Environmental Protection Agency's (EPA) proposed rule regulating the ocean incineration of toxic wastes. In light of the hazardous waste crisis confronting America, we believe that the United States should proceed with a program under carefully controlled and tightly regulated conditions for at-sea incineration to dispose of toxic wastes. We believe that it is imperative that the United States proceed with a well regulated program for the safe disposal of hazardous wastes that are produced on a regular basis by American industry. Presently, large quantities of organic wastes, which could be successfully incinerated, are disposed of on land. The 98th Congress wisely enacted into law the Resource Conservation and Recovery Act imposing more stringent restrictions on land disposal, burning of wastes in boilers, and the use of other disposal methods. It is our feeling that this legislation will result in an increased demand for ocean incineration and other alternatives to land disposal by the year 2000.

It is noteworthy that the largest and one of the most highly regarded of the country's environmental organizations supports the program. Kenneth Kamlet, Director, Pollution and Toxic Substances Division of the National Wildlife Federation, in a recent letter to The New York Times stated,

> As longstanding opponents of direct ocean dumping, we yield to no one in our zeal to protect the ocean from mindless exploitation. Our support for ocean incineration (when coupled with adequate safeguards) is no contradiction. This is not a case of "out-of-sight, out-of-mind" dumping; it is a matter of destroying, to the limits of modern technology, wastes that if left untreated will persist as threats to air, land and sea alike.
>
> Let's make ocean incineration as safe as possible, but let's not discard it entirely or subject it to lengthy delays merely because it falls short of perfection.[4]

A number of studies indicate that burning of hazardous waste at sea may be preferable to land incineration. One reason is that ocean burn sites are at a considerable distance from populated areas. Therefore any potential risk to human health will be significantly lowered due to the remote site. European nations have successfully burned toxic waste at sea since 1969 with minimal adverse impacts. It has been determined that over three hundred voyages have been made in the North Sea without the occurrence of any casualties or spills. In the United States since 1974, the EPA has engaged successfully in four ocean incineration research burnings.

There has been justifiable concern expressed about the possibility of spills during the incineration of wastes at sea. From both experience and a number of studies which have been undertaken, the chances of such spills are extremely remote. The fact that hazardous materials are transported currently on a daily basis in and out of U.S. ports and waterways should be recognized. In fact, hazardous waste which would be burned at sea is a very small percentage of materials which are now being transported on vessels.

The chance of a catastrophic spill of toxic waste would be mitigated through the use of state-of-the-art collision and spill-prevention safeguards. Specially built vessels which meet rigid environmental and safety standards would be used for this activity. The ships designed for this purpose are double-hulled and have a number of isolated carrying tanks. In the unlikely event of a spill, this configuration greatly minimizes release of any quantity of materials. Two such vessels have been built in the United States and will be a part of the U.S.-flag fleet.

It is our understanding that the proposed EPA regulations on at-sea incineration will impose much stricter requirements than those imposed on land-based incineration. Companies desiring to engage in the burning of wastes at sea would have to apply for a permit providing in detail their disposal plans. Among the requirements for successful applicants would be information on water analysis procedures, trial burn plans, transportation and loading procedures, financial responsibility, vessel and incineration standards, and monitoring and recording devices.

Environmental risks would be reduced by the proposed regulations through the carriage of safety inspectors aboard the incineration vessels. The SIU endorses a system whereby constant monitoring of the activities would take place. The monitoring could be achieved by a combination of EPA and Coast Guard inspectors on board the vessels and/or sophisticated devices designed specifically for such use. A tamper-proof computerized system already has been designed which would avail the EPA of all data relevant to operations as well as be able to alert on-board officials or crew of activities during the process.

The SIU recognizes that there has been a substantial amount of uneasiness about the concept of burning hazardous waste. If Americans are more comfortable with the activity taking place at considerable distances off shore, the SIU, if given the opportunity to work aboard such ships, would have no problem with crewing the vessels at those preferred distances. U.S. crews would be specially trained to handle the operation wherever it would take place. The SIU would be pleased to participate in facilitating that process in any way it can be of service. In addition to the union's voluntary precautionary practices, the EPA proposed regulations would insure that rigid standards would be met in all phases of the operations. We would, in fact, urge that on a frequent basis, the crew members themselves be physically monitored for any effects which the incineration process may have. This would enable regular observations of any effects to individuals as well as insure the well-being of American crew members.

In conclusion, the Seafarers International Union supports the proposed rule. We firmly believe that the program, as it is currently proposed, would safeguard the American people and the environment as well as the crew members who would be aboard the ships. There has been sufficient research on at-sea incineration as well as routine operational experience over a number of years to show that the program is a viable alternative to disposing of hazardous materials on land. We respectfully urge the Committee to recommend that the Environmental Protection Agency adopt these regulations and proceed with a program that will provide for the safe ocean disposal of toxic wastes.

Thank you for the opportunity to submit our views at this hearing. We would be pleased to work with the Subcommittee on this important issue.